OPERATING AND SERVICE MANUAL

BOONTON ELECTRONICS CORPORATION

MP MASTER
MA24289

OPERATING AND SERVICING MANUAL

MODEL 126CD

AUTOMATIC RESISTANCE TRIMMING BRIDGE

126CD
b

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I. SPECIFICATIONS

1-1 Range:
10 ohms - 11.111 M (May be programmed to 0.1 ohm with decreased accuracy.)

1-2 Control:

1-2-1 Start Test: External contact closure for 3mS, min, and push button.

1-2-2 Trim: Push button controls. Button release initiates final test.

1-2-3 Stop Trim: Push button stops trimming.

1-2-4 "Stop - Final" Test Delay: Adjustable from 30 to 100 mS by Panel Control. (Recessed screwdriver adjustment.)

1-3 R_x Wiring:
4-Wire Kelvin Compensated

1-4 Display:

1-4-1 Initial Low: Orange lamp shows reading below Minimum Start Value.

1-4-2 Trimming: Blue Panel Lamp

1-4-3 "Accept": Green Panel Lamp

1-4-4 "High": Red Panel Lamp

1-4-5 "Low": Yellow Panel Lamp

1-5 Outputs:

1-5-1 Initial Low Reject - SPST mercury wetted relay contacts

1-5-2 Trim - SPDT mercury wetted relay contacts

1-5-3 Accept - SPST mercury wetted relay contacts

1-5-4 Low - SPST mercury wetted relay contacts

1-5-5 High - SPST mercury wetted relay contacts

1-5-6 Test Complete - SPST mercury wetted relay contacts

1-6 Final Value: 5 Digits + 4 Multipliers

Multiplier	Increments	Range
X1 ohm	0.1 ohm	11.111K
X10 ohms	1.0 ohm	111.11K
X100 ohms	10 ohms	1.1111M
X1K	100 ohms	11.111M

1-7 Minimum Start Value: 0 to -60% of Final Value in 1% steps.

1-8 Stop Value: 0 to -11.1% of Final Value in 0.01% steps.

1-9 Tolerance Limits for Final Value:
No. Digits: 2 for Plus and 2 for Minus
Range: 0 to ± 11%
Increments: ± 0.1%

1-10 System Measurement Accuracy

Rx	Grounded	Floating
1 ohm	± 0.5%	± 0.5%
100 ohms - 1M	± 0.05%	± 0.1%
1M-11.111M (Shielded)	± 0.25%	± 0.5%

Notes:
1. See paragraph 4-4 for derivation of accuracy stated above.
2. Accuracies stated above are guaranteed for environmental temperature range of 68°F. to 86°F. (See para. 4-4-6)
3. Accuracies stated are also predicated upon use of "Kelvin" type cable as shown on Dwg. AX5100-40.

1-11 Stop Time: 10 mS Max.

1-12 Final Test Time: 50 mS

1-13 Stop to Final Test Delay - 30 to 100 mS

1-14 Excitation Voltage:
Excitation level across Rx automatically adjusts to guarantee specified accuracy, limit power dissipation in Rx, and protect standard arm resistors. (See Dwg. AX5137-95)

1-15 Read: Push button forces continuous interrogation of final value with selected ± tolerance limits. Results of "read" test are shown on Final Decision lamps.

1-16 Power Requirements:
105/125 50-60 cps
150 watts max.

1-17 Physical Dimensions:
Panel Space: 19" X 8 3/4"
Chassis: 16" X 17"

1-18 Relay Contact Ratings:
2A Max.
500V Max.
100 VA Max.

Note: These ratings apply with proper contact protection. (See Sect. III - Operating Instructions)

II GENERAL DESCRIPTION

The Model 126CD is an integral, rack mounting, 4-wire resistance testing unit primarily intended for controlling the mechanical operation by which film resistors, and thick film microcircuitry resistors are increased to final value.

Upon receipt of an external Start Test Signal, the Model 126CD first compares, on a high/low basis, the resistor under test to the programmed Minimum Start Value. If the resistance under test is higher than the Minimum Start Value, and lower than the High Tolerance Limit, the Trim command is issued, and the Stop Value is programmed.

When the increasing resistance of the piece being processed reaches the Stop Value, the Trim command is removed and an automatic high/low/go test is performed, after a delay time, in respect to the Final Value and its selected plus and minus tolerance. The delay time between Stop and Final test prevents an erroneous test of Final Value before the adjusting operation has actually stopped.

The value of Rx can be read at any time by depressing the "Read" button, and finding a toggle point in terms of the % Tolerance Limits, or the numerical value of the Final Value.

III. OPERATING INSTRUCTIONS

3-1 Power Cable

A 3-conductor power cable, when plugged into an appropriate receptacle, grounds the equipment. The off-set pin on the 3-pronged power cable plug cap is the ground pin.

To preserve this protection feature when operating from a 2-contact outlet, use a 3-prong to 2-prong adapter and connect the green pig-tail on the adapter to ground.

3-2 R_x Connections

The resistance to be processed should be connected to the R_x receptacle J1 via a 4-wire type cable as shown on Dwg. AX5100-40.

It is desirable to continue the 4-wire system all the way to the actual resistance to be tested to eliminate the error producing effects of lead and contact resistance. If this is not practical, the high and low pairs of the 4-wire cable should be joined as close as possible to the point of measurement and a 2-wire system used from this junction to the actual point of measurement. The resistance of the 2-wire system will add into the value being measured; however, this error will probably be negligible for values of resistance greater than a few thousand ohms.

3-3 Input-Output Connections

3-3-1 General

Control signals flow through the Input-Output receptacle J2. (See Logic Diagram-Control Section CX5137-29-1.)

3-3-2 Timing Considerations

See Timing Diagram - Dwg. BX5137-27.

3-3-3 Contact Protections

Except for very light contact loads such as thermocouples and strain gages, mercury wetted relay contacts must be protected. The protecting device may be a network comprised of a resistor and capacitor in series or a TRIAC (silicon gate-controlled AC switch).

For R-C networks, the chart (Dwg.AX5100-51) affords a convenient means of determining the necessary contact protection. Dwg. AX5100-50 shows a typical connection of elements.

Dotted lines indicate a typical calculation. To use the chart, the value of load current is first found on the horizontal scale (I). When reading directly up to the sloping capacity line, the value of C is determined from the right-hand scale (C). To find R, read directly up from the load current value to its intersection with the appropriate load voltage line (V). The value of R is then read from the left-hand scale (R).

With DC inductive loads it is also recommended that a diode be placed in parallel with the load to suppress the Ldi/dt kick when the circuit is opened.

For AC loads, peak values of current and voltage must be used. This assumes the worst conditions.

To reduce the peak voltages in inductive circuits to safe levels, the value of C in the protective network can be increased above the minimum value required for contact protection. The appropriate value can be determined by measurement of peak values within the first few milliseconds after break of the contacts.

For larger AC loads at currents exceeding the relay contact ratings or if switching transients (turn-off) tend to effect internal or external circuits, a TRIAC may be used. However, as the "turn-off" occurs when the AC voltage swings through zero, up to a half cycle turn-off delay in the external device may be experienced. Dwg. AX5100-50 shows a typical connection of TRIAC protective device.

3-4 Limit Settings

3-4-1 Minimum Start Limit (Lowest Initial Value)

Set this limit to that value below which trimming is not desirable. This limit detects shorts or "smears" on film circuits and avoids unnecessarily long trimming cycles which may result in a poor geometry of the final piece, excessive heating or an unacceptably long trim cycle.

3-4-2 Stop Limit

Set this limit below Final Value by amount of anticipated overshoot. This overshoot is due to reaction time of the 126CD plus the usually more dominating time-constant effects incurred with the associated mechanical abrading equipment. The exact value of offset can best be determined by experimentally trimming a few resistors, and reading the "overshoot" by means

of the positive tolerance decade switches with the "Stop" limit set to 0.00%.

To return the Final value to "nominal", set the Stop limit to a numerical value equal to the overshoot.

3-4-3 Final Value

Set this value to the nominal or design-center value of the resistance to be manufactured. Use smallest multiplier possible.

3-4-4 Tolerance Limits

Set the plus and minus tolerance limits by means of the (2) sets of (2) decimal switches which are calibrated in terms of ±% deviation from the Final Value.

3-5 Delay Adjust

Set the Delay Adjust pot with a screwdriver fully clockwise to obtain maximum delay of approximately 100 milliseconds between "Stop Trim" and Final Test. Full counterclockwise rotation will reduce this delay to approximately 30 millseconds. Unless specifically required, it is recommended that this control be kept in its maximum delay position to minimize the possibility of error due to a Final Test before the adjusting has actually stopped.

3-6 Turning on Equipment

The power switch should be turned "on" (up position). The "power on" conditions will be confirmed by the"white" pilot lamp. Operation of the bridge will be confirmed by the lighting of (1) Final decision lamp when the "Read" button is depressed.

3-7 Typical Operation Cycle

3-7-1 Example - To trim a thick film resistor to a final value of 10K ± 1%.

3-7-2 Set Limits

3-7-2-1	Final Value	1000.0 X 10
3-7-2-2	Stop Value (-1.5% = 9850 ohms)	-1.50%
3-7-2-3	Minimum Start Value (-30% = 7000 ohms)	-30.0%

3-7-3 Set Delay - Maximum clockwise = 100 mS

3-7-4 Connect R_X cable to R_X.

3-7-5 Route trim and control signals through appropriate pins of J2. (See paragraph 3-3-1.)

3-7-6 Initiate cycle by means of panel"Start Test" button or external contact closure across appropriate pins of J2. (See Dwg. CX5137-29-1.)

3-7-7 Set Stop limit in accordance with para. 3-4-2.

3-8 Manual Trimming

The Trim button overrides all automatic control and may be used for manual control of the abrading equipment regardless of decision status.

When the button is released on automatic high/low/go, test is performed.

The Trim lamp goes on when the Trim button is pushed only if the Final Decision present is Low.

3-9 Precision Resistance Measurement

To measure the actual value of an unknown resistor, set the allowable plus and minus tolerance limits to +000%.. Push "Read" button and adjust Final Value until a high/low toggle point is attained.

Read actual value from dials.

Alternatively, to read % deviation of an unknown resistor, set Final value to nominal and adjust ± tolerance limits to obtain a toggle point.

3-10 Stop Trim

Push button marked "Stop Trim." Cycle can be re-started by normal start procedure.

3-11 Multiple (Floating) 126CD Operation

Each 126CD is an integral unit with its own power supplies and control logic. To simultaneously operate (2) or more 126CD units in a situation where the "hot" Rx leads (pins C & H) of one instrument are to be connected in common to the "cold" Rx leads (pins A & B) of another unit, the shorting link between J3 and J4 at the rear of the unit must be opened. The "Guard" lead is internally connected to the "cold" Rx leads on the Model 126CD and no external connection to this lead should be made.

3-12 Excitation

The voltage impressed across Rx will follow the curves shown on Dwg. AX5137-94 and the dissipation in R_x will be as shown on AX5137-95.

IV. THEORY OF OPERATION

Ref - Block Diagram	Dwg. BX5137-46
Block Diagram - Ref. Sect.	Dwg. BX5137-68
Logic Flow Diagram	Dwg. BX5137-39
Timing Diagram	Dwg. BX5137-27
Logic Diagrams	Dwg. CX5137-29-1&2

4-1 General

The Model 126CD is a 4-wire, Kelvin Bridge (see BX5137-68) in which (4) separate ratio arms are employed to generate minimum Start, Stop and Final limits.

The ratio arms are selected in accordance with the instrument's control logic and the actual limit measurements are made by a floating differential input DC amplifier (P2A).

The actual implementation of the bridge control is delineated in the Block Diagram (BX5137-46) and the Logic Diagrams (CX5137-29-1 and CX5137-29-2).

4-2 Measurement Operation (See Dwg. BX5137-68)

The essential elements of the bridge consist of the Standard Arm (SA1 - SA5), the resistance under test (R_x), and the upper ratio arms (SA6B, SA6C), and the various lower ratio arms (SA7 - SA15). The Kelvin yokes are formed by SA6 and R5 -R10.

For a single limit operation such as the Minimum Start Value test, the Comparator (A) determines if the voltage drop across R_x is less or greater than the reference voltage generated in the ratio arms formed by SA7, SA8 and R11. Similarly, for the Stop Value attainment, the Comparator senses the cross over of V_x in respect to the Stop Value voltage generated at that time by the ratio arms formed by SA9, SA10, SA11, and R12.

When a double limit test, such as the Final Value check, is performed, the Comparator sequentially compares V_x against the plus and minus limits generated in SA12 - SA15 plus R13 and R14. A second order matrix computes Accept, High or Low from these tow tests. The limits are sequentially selected by K12.

Multiplication is effected by the decade resistors associated with SA6B and SA6C. (See Dwg. BX5137-17.) The cross over sensitivity of the Comparator is typically 100 μV.

4-3 Excitation (See Dwg. AX5137-94)

The Model 126CD incorporated an internal 21 VDC supply to drive the Bridge circuits. In series with the output of this supply is 360 ohms (R1A/B, R5A/B) which limits the current that can pass through the Bridge Arms.

Due to the division of voltage between the series resistor and the actual Bridge elements, the maximum voltage actually impressed across R_X will follow the family of curves shown on Dwg. AX5137-94.

The maximum possible Comparator errors in terms of percentage of nominal values are shown on Dwg. AX5137-96.

4-4 System Measurement Accuracy

4-4-1 General

In strict usage, % "accuracy" is defined as (100%-Possible error), however in deference to common usage the error term in this manual is treated as accuracy.

The system measurement accuracies stated in para. 1-10 have been derived on the basis of arithmetically adding the specific errors delineated below.

4-4-2 Comparator Error (Ec)

The Comparator circuitry operates on a fixed voltage differential or "gray zone". Since this voltage is fixed, the relative error contributed by this source is a function of excitation level and hence magnitude of R_X.

The typical short term operating differential is ±100 micro volts, however, this defferential may shift with ambient temperature.

Over the normal operating range (68°-86°F.) the combined effective differential is assumed to be not greater than ± 200 microvolts.

The quantitive relationship between Ec and Vx is as follows:

$$Ec = K \times \frac{200 \times 10^{-6}}{Vx \text{ (volts)}} \times 100\%$$

Where "K" is a constant relating effective error to the multiplier (ratio arms) employed Values of K are as follows:

Dial Multiplier	Rs	Rx	K
X1 ohm	10	1	1.1
X10 ohms	1	1	2
X100 ohms	1	10	11
X1K	1	100	120

For any given value of Rx, Vx can be obtained from Dwg. AX5137-94.

The results of the equation given above are plotted on Dwg. AX5137-96 (Comparator Error vs. Rx)

For low values of R_X, Dwg. AX5137-96 shows that Ec may exceed the ± 0.05% accuracy claim, however, this is not actually true. The Kelvin yoke is calibrated against a precision 10 ohm standard (See para. 5-4), and this apparent error is reduced to a level within specification limits.

4-4-3 Standard Arm Resistors

These resistors are ± 0.01% precision wire wound types.

4-4-4 Ratio Arm Resistors

These resistors are also ± 0.01% precision wire wound types.

4-4-5 Tolerance Tap Point Resistors

These resistors may be ± 0.05%, however, the error contributed by these resistors is quite negligible. For instance, if the resistor for the 1% tap point is actually 0.05% in error, the effective system measurement error would only be 0.05% X 1% = 0.0005%.

4-4-6 Environmental Errors

The Comparator errors shown on Dwg. AX5137-96 have been calculated on the basis of a normal working ambient spread of 10°C.

For temperature spreads in excess of 10°C., add a possible error of:

$$ET = \frac{K(\Delta T°C) \times 50 \times 10^{-6} \times 100\%}{Vx}$$

4-5 Control Operation (See Dwgs. CX5137-46, CX5137-29-1&2, BX5137-39, BX5137-27)

The Block Diagram (Dwg. CX5137-46) shows the overall logic concept of the Model 1260D.

"OR-NOT" type logic is employed wherein the Boolean Identity $A \cdot B = \overline{A} + \overline{B}$ is used to perform the "AND" function. This relationship permits the implementation of "Anding" signals A and B by means of inverting each signal and combining them in a second Inverter or "OR-NOT" gate.

Referring to the Logic Flow Diagram (Dwg. BX5137-39) and the Timing Diagram (Dwg. BX5137-27) a complete cycle can be traced as follows:

1. External contacts are established to Rx and a Start Test signal is issued to the 1260D.

2. The Start Test signal energizes the Minimum Start limit and in 25 mS the Comparator checks Rx against this limit. If the result of this is "Low", the "Initial Low" output and the "Test Complete" signal are issued. If the result is "High", the "Stop" limit is energized.

3. The Comparator then checks Rx to be less than the "Stop" limit (25mS) and if this test is affirmative, the "Trim" command is issued. If the initial value of Rx was greater than the "Stop" limit, a "Final Test" would be performed after the adjustable delay period. (See BX5137-27).

4. The trimming operation continues until Rx reaches the "Stop" limit at which time the "Trim" command is removed. (The delay time of the Comparator form actual attainment of "Stop" limit to opening of the "Trim" relay is 10 mS maximum.)

5. After the adjustable delay, which is provided to guarantee the fact that the mechanical abrading has actually stopped, the "Final" limits are programmed, a "Final" test is performed (50mS), and an Accept, High or Low decision is rendered.

4-6 Floating Operation

To enable floating operation of the 126CD, that is the measurement of a Rx, neither end of which is connected to chassis, requires a very special power supply.

The power supply employed in the Model 126CD is a unit in which the windings of the power transformer are completely shielded from each other electrostatically. This shielding reduces stray capacitance to acceptably low levels, however, some pick-up, usually of power line frequency, is inevitable in the Rx circuit.

The effects of this residual pick-up are reflected in the degradated accuracy statements for floating operation.

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126 CD

V. MAINTENANCE

5-1 General

In the event of malfunction, it is advised that reference be made to the THEORY OF OPERATION - Section IV, the Block Diagram (CX5137-46), the Logic Flow Diagram (BX5137-39) and the Block Diagram for the Reference Section (BX5137-68).

With an understanding of the functional system, it should be possible to localize the malfunction based upon operational symptoms. When this is done, the detailed schematics for the malfunctioning circuitry should be consulted.

5-2 Test of Measurement Accuracy (Calibration)

5-2-1 Connect standard resistor (10K) to test leads.

5-2-2 Set tolerance limits to ±00%.

5-2-3 Push "Read" button and adjust nominal value until High/Low toggle point is obtained.

5-2-4 Read nominal value from dials and compare to standard. Maximum discrepancy should be ±0.05% plus possible error in standard.

5-3 Adjustment of Comparator "Zero".

5-3-1 Test of ±15 VDC Supply Voltages

With a digital voltmeter or meter of suitable accuracy, check voltages at the Green and Orange pins of the P2A. These voltages should be + and - 15 VDC ±5% respectively absolute and within 15 mV of each other. If necessary, adjust R16 and R27 to obtain this condition.

5-3-2 Philbrick P2A Adjustment

If absolutely necessary, carefully adjust the screw closest to the wiring terminals to obtain a symmetrical toggle point about a standard value. When this is being done, the 126CD nominal should be set to the value of the standard resistor with ±00% tolerance limits and the "Read" button should be depressed.

5-4 Adjustment of Kelvin Yoke

5-4-1 Connect a 10 ohms standard resistor to the R_x leads and read the value with ±00% tolerance limits.

With the nominal value set to 10.0 ohms, adjust pot R9 at the rear of the unit to obtain a toggle. When the toggle point is obtained, note the swing of the adjustment screw and set it to a "mid" point.

5-5 Trouble Shooting Hints

5-5-1 Failure to cycle properly.

5-5-1-1 Check operation with Start Test button.

5-5-1-2 Check for presence of Start Test signal from mechanical equipment.

5-5-1-3 Trace Start Test continuity to 126CD.

5-5-1-4 Check operating limits using a 10K pot to simulate R_x.

5-5-2 Erratic Measurement

5-5-2-1 Check R_x cable for continuity, particularly that of shielding.

5-5-2-2 Check integrity of 4-wire system.

5-5-2-3 Check power line ground.

5-5-2-4 Check for presence of excitation (Power Supply).

5-5-2-5 Check for exceptional noise on power line.

5-5-3 Out of Spec Measurement

5-5-3-1 Check measurement with known standard resistor.

5-5-3-2 Check excitation level and presence.

5-5-3-3 Check Comparator zeroing.

5-5-3-4 Check for presence of excessive dirt, dust, condensation on decade switches or R_x connector.

5-5-3-5 Check Standard Arm and Ratio Arm resistor values.

TABLE OF REPLACEABLE PARTS - MAIN ASS'Y

AUTOMATIC RESISTANCE TRIMMING BRIDGE

Reference		Description	BEC Part No.
A1	Amplifier	Philbrick, P2A	421001
CB1	Temporary Memory Card Assy		BX5134-10
CB2	Or-Not Matrix Card Assy		BX5137-36
CB3-CB5	Flip Flop II Card Assy		BX5132-22
CB6	Flip Flop III Card Assy		BX5132-25
CB7	Clock Gen. II Card Assy		BX5136-27
CB8	Driver II Card Assy		BX5124-118
CB9	Driver/Inverter Card Assy		BX5137-33
CB10	One Shot Multivibrator Card Assy		BX5137-89
CB11	Delay III Card Assy		BX5137-48
CB12	Strobe Gen. II Card Assy		BX5135-50
CB13	Strobe Gen. I Card Assy		BX5135-52
CB14	Trigger II Card Assy		BX5135-76
CR1-CR19	Diode 1N456A		530051
E1	Lamp, Neon	NE2D	545108
E2-E6	Lamp, Incadescent	No. 330 14V	545110
F1	Fuse	1/2A Type AGC	545502
J1	Receptacle, 9 Pin Min	Amphenol 165-15	477168
J2	Receptacle, 15Pin	Cinch-Jones S-315-EB	479172
J3	Binding Post	Blk Gen. Radio 938-WB	740120
J4	Binding Post	Met. Gen. Radio 938-P	740107
J5	Receptacle	Cinch-Jones P-304AB	
K1-K3	Relay, Mercury Wetted	MWSL16161-510 Adams & Westlake	471003
K4-K11	Relay, Mercury Wetted	MWS7-16261-71 Adams & Westlake	471004
K12	Chopper	Bristol C-1440-1	540115
P1	Plug	Cinch-Jones P-315-CCT	477134

TABLE OF REPLACEABLE PARTS - MAIN ASS'Y

AUTOMATIC RESISTANCE TRIMMING BRIDGE

Reference		Description	BEC Part No.
R1	Resistor	1 Meg 1/2W 5% AB	301159
R2		1 Meg 1/2W 5% AB	301159
R3		1 Meg 1/2W 5% AB	301159
R4		1 Meg 1/2W 5% AB	301159
R5		21.5 Ohms 1/2W 1% Mepco	326024
R6		178 Ohms 1/2W 1% Mepco	226035
R7		909 Ohms 1/2W 1% Mepco	326104
R8		499 Ohms 1/2W 1% Mepco	326073
R9		500 Ohms 1/2W 10% Bourns	311205
R10		100 Ohms 1/2W 1% Mepco	326030
R11		7.6K 1/3W .01% Epco	314262
R12		36.116K 1/2W .01% Epco	309320
R13		40K 1/2W .01% Epco	309355
R14		35.16K 1/2W .01% Epco	309499
R15		Pot. 100K 2W 20% AB	311213
R16		1 Ohm W.W.	309011
R17		5.1K 1/2W 5% AB	301104
SW1	Switch, Toggle	Carling T110-B-72	465119
SW2	Switch, Push Button	C113P5 Controls Co. of America	465117
SW3	Switch, Push Button	WC150P6-02 Controls Co. of America	465118
SW4	Switch, Push Button	C113P5 Controls Co. of America	465117
SW5	Switch, Push Button	WC150P6-02 Controls Co. of America	465118

126CD
b

TABLE OF REPLACEABLE PARTS - MAIN ASS'Y

AUTOMATIC RESISTANCE TRIMMING BRIDGE

	Reference	Description	BEC Part No.
SA1	Decade	Nominal Decade 10K/Step	BX5136-29-5
SA2	Decade	Nominal Decade 1K/Step	BX5136-29-4
SA3	Decade	Nominal Decade 100Ω/Step	BX5136-29-3
SA4	Decade	Nominal Decade 10Ω/Step	BX5136-29-2
SA5	Decade	Nominal Decade 1Ω/Step	BX5136-29-1
SA6	Switch Assembly	Multiplier	BX5137-17
SA7	Switch Assembly	-Tol. 10%/Step	BX5136-32-1
SA8	Decade	-Tol. 1%/Step	BX5136-33-10
SA9	Decade	-Tol. 1%/Step	BX5136-33-10
SA10	Decade	-Tol. 0.1%/Step	BX5136-33-9
SA11	Decade	-Tol. 0.01%/Step	BX5136-33-8
SA12	Decade	-Tol. 1%/Step	BX5136-33-10
SA13	Decade	-Tol. 0.1%/Step	BX5136-33-9
SA14	Decade	+Tol. 1%/Step	BX5136-29-10
SA15	Decade	+Tol. 0.1%/Step	BX5136-29-9

126CI
b

TABLE OF REPLACEABLE PARTS - SUB-ASS'Y

SWITCH ASSEMBLIES

	Reference	Description	BEC Part No.
SA1	Decade	Nominal 10K/Step	BX5136-29-5
R1	Resistor	10K 0.01% 1/2W Epco	309269
R2	↓	20K 0.01% 1/2W Epco	309291
R3		40K 0.01% 1/2W Epco	309355
R4		40K 0.01% 1/2W Epco	309355
SA2	Decade	Nominal 1K/Step	BX5136-29-4
R1	Resistor	1K 0.01% 1W Epco	312350
R2	↓	2K 0.01% 1/2W Epco	309253
R3		4K 0.01% 1/2W Epco	309257
R4		4K 0.01% 1/2W Epco	309257
SA3	Decade	Nominal 100 /Step	BX5136-29-3
R1	Resistor	100Ω 0.01% 1W Epco	312138
R2	↓	200Ω 0.01% 1W Epco	312157
R3		400Ω 0.01% 1W Epco	312188
R4		400Ω 0.01% 1W Epco	312188
SA4	Decade	Nominal 10 /Step	BX5136-29-2
R1	Resistor	10Ω 0.05% 1/2W Epco	309028
R2	↓	20Ω 0.05% 1/2W Epco	309032
R3		40Ω 0.05% 1W Epco	312134
R4		40Ω 0.05% 1W Epco	312134
SA5	Decade	Nominal 1 /Step	BX5136-29-1
R1	Resistor	1Ω 0.05% 1/3W Epco	314021
R2	↓	2Ω 0.05% 1/3W Epco	314022
R3		4Ω 0.05% 1/3W Epco	314024
R4		4Ω 0.05% 1/3W Epco	314024

TABLE OF REPLACEABLE PARTS - SUB-ASS'Y

SWITCH ASSEMBLIES

	Reference	Description	BEC Part No.
SA6	Switch Assembly	Multiplier	BX5137-17
R1	Resistor	400K 0.01% 1/2W Epco	309578
R2		40K 0.01% 1/2W Epco	309355
R3		4K 0.01% 1/3W Epco	314257
R4		400Ω 0.01% 1/3W Epco	314088
R5		400Ω 0.01% 1/3W Epco	314088
R6		4K 0.01% 1/3W Epco	314257
R7		40K 0.01% 1/2W Epco	309355
R8		400K 0.01% 1/2W Epco	309578
SA7	Switch Assembly	-Tol. 10%/Step	BX5136-32-1
R1	Resistor	4K 0.01% 1/3W Epco	314257
R2		8K 0.01% 1/3W Epco	314267
R3		16K 0.01% 1/2W Epco	309282
SA8	Decade	-Tol. 1%/Step	BX5136-33-10
R1	Resistor	400Ω 0.01% 1/3W Epco	314088
R2		800Ω 0.01% 1/3W Epco	314188
R3		1.6K 0.01% 1/3W Epco	314251
R4		1.6K 0.01% 1/3W Epco	314251
SA9	Decade	-Tol. 1%/Step	BX5136-33-10
R1	Resistor	400Ω 0.01% 1/3W Epco	314088
R2		800Ω 0.01% 1/3W Epco	314188
R3		1.6K 0.01% 1/3W Epco	314251
R4		1.6K 0.01% 1/3W Epco	314251

TABLE OF REPLACEABLE PARTS - SUB-ASS'Y

SWITCH ASSEMBLIES

	Reference	Description	BEC Part No.
SA15	Decade	+Tol. 0.1%/Step	BX5136-29-9
R1	Resistor	40Ω 0.05% 1/3W Epco	314033
R2	↓	80Ω 0.05% 1/3W Epco	314037
R3	↓	160Ω 0.05% 1/3W Epco	314050
R4	↓	160Ω 0.05% 1/3W Epco	314050

TABLE OF REPLACEABLE PARTS - SUB-ASS'Y

CLOCK GEN II LOGIC CARD ASS'Y

	Reference	Description	BEC Part No.
C1	Capacitor	0.001 µf 200V ±10% Sprague	234039
C2		0.001 µf 200V ±10% Sprague	234039
C3		0.001 µf 200V ±10% Sprague	234039
C4		0.001 µf 200V ±10% Sprague	234039
C5		0.001 µf 200V ±10% Sprague	234039
C6		0.001 µf 200V ±10% Sprague	234039
C7		0.1 µf 200V ±10% Sprague	234005
C8		0.1 µf 200V ±10% Sprague	234005
C9-C10		0.001 µf 200V ± 10% Sprague	234039
CR1-CR6	Diode	1N456A General Instrument	530051
Q1-Q6	Transistor	2N404 Texas Instrument	528009
Q7		2N1671B General Electric	528013
Q8-Q9		2N404 Texas Instrument	528009
R1	Resistor, Comp.	5.1K 1/2W 5% AB	301104
R2		30K 1/2W 5% AB	301122
R3		220K 1/2W 5% AB	301143
R4		220K 1/2W 5% AB	301143
R5		220K 1/2W 5% AB	301143
R6		30K 1/2W 5% AB	301122
R7		30K 1/2W 5% AB	301122
R8		5.1K 1/2W 5% AB	301104
R9		220K 1/2W 5% AB	301143
R10		5.1K 1/2W 5% AB	301104
R11		220K 1/2W 5% AB	301143
R12		30K 1/2W 5% AB	301122
R13		30K 1/2W 5% AB	301122

TABLE OF REPLACEABLE PARTS - SUB-ASS'Y

CLOCK GEN II LOGIC CARD ASS'Y

	Reference	Description	BEC Part No.
R14	Resistor, Comp	30K 1/2W 5% AB	301122
R15		220K 1/2W 5% AB	301143
R16		220K 1/2W 5% AB	301143
R17		220K 1/2W 5% AB	301143
R18		5.1K 1/2W 5% AB	301104
R19		220K 1/2W 5% AB	301143
R20		5.1K 1/2W 5% AB	301104
R21		30K 1/2W 5% AB	301122
R22		220K 1/2W 5% AB	301143
R23		220K 1/2W 5% AB	301143
R24		30K 1/2W 5% AB	301122
R25		30K 1/2W 5% AB	301122
R26		5.1K 1/2W 5% AB	301104
R27		220K 1/2W 5% AB	301143
R37		47K 1/2W 5% AB	301127
R38		100 1/2W 5% AB	301063
R39		390 1/2W 5% AB	301077
R40		220K 1/2W 5% AB	301143
R41		5.1K 1/2W 5% AB	301104
R42		5.1K 1/2W 5% AB	301104
R43		30K 1/2W 5% AB	301122
R44		220K 1/2W 5% AB	301143

TABLE OF REPLACEABLE PARTS - SUB-ASS'Y

TRIGGER LOGIC II CARD ASS'Y

	Reference	Description	BEC Part No.
C1	Capacitor	.1μF 200V ±20% Sprague 192P	234005
C2	Capacitor	.022μF 200V ±5% Sprague 192P	234040
C3	Capacitor	.001μF 200V ±10% Sprague 192P	234039
C4	Capacitor	.01μF 200V ±10% Sprague 192P	234027
CR1	Diode	1N456A G.I.	530051
Q1-Q10	Transistor	2N404 T.I.	528009
R1	Resistor, Comp.	56K ±5% 1/2W A.B.	301129
R2		Deleted	
R3		5.1K ±5% 1/2W A.B.	301104
R4		120K ±5% 1/2W A.B.	301137
R5		5.1K ±5% 1/2W A.B.	301104
R6		30K ±5% 1/2W A.B.	301122
R7		220K ±5% 1/2W A.B.	301143
R8		5.1K ±5% 1/2W A.B.	301104
R9		30K ±5% 1/2W A.B.	301122
R10		220K ±5% 1/2W A.B.	301143
R11		270Ω ±5% 1/2W A. B.	301073
R12		120K ±5% 1/2W A.B.	301137
R13		5.1K ±5% 1/2W A.B.	301104
R14		120K ±5% 1/2W A.B.	301137
R15		5.1K ±5% 1/2W A.B.	301104
R16		30K ±5% 1/2W A.B.	301122
R17		30K ±5% 1/2W A.B.	301122
R18		220K ±5% 1/2W A.B.	301143
R19		5.1K ±5% 1/2W A.B.	301104
R20		30K ±5% 1/2W A.B.	301122

TABLE OF REPLACEABLE PARTS - SUB-ASS'Y

TRIGGER LOGIC II CARD ASS'Y

Reference		Description	BEC Part No.
R21	Resistor, Comp.	220K ±5% 1/2W A.B.	301143
R22		5.1K ±5% 1/2W A.B.	301104
R23		5.1K ±5% 1/2W A.B.	301104
R24		30K ±5% 1/2W A.B.	301122
R25		30K ±5% 1/2W A.B.	301122
R26		220K ±5% 1/2W A.B.	301143
R27		220K ±5% 1/2W A.B.	301143
R28		30K ±5% 1/2W A.B.	301122
R29		5.1K ±5% 1/2W A.B.	301104
R30		30K ±5% 1/2W A.B.	301122
R31		30K ±5% 1/2W A.B.	301122
R32		220K ±5% 1/2W A.B.	301143

TABLE OF REPLACEABLE PARTS - SUB-ASS'Y

STROBE GEN I LOGIC CARD

	Reference	Description	BEC Part No.
C1	Capacitor	.001uF 200V ±10% Sprague 192P	234039
C2	Capacitor	.003uF 200V ±10% Sprague 194P	234001
C3	Capacitor	.001uF 200V ±10% Sprague 192P	234039
Q1-Q10	Transistor	2N404T.I.	528009
R1	Resistor, Comp.	30K ±5% 1/2W A.B.	301122
R2		220K ±5% 1/2W A.B.	301143
R3		5.1K ±5% 1/2W A.B.	301104
R4		120K ±5% 1/2W A.B.	301137
R5		5.1K ±5% 1/2W A.B.	301104
R6		30K ±5% 1/2W A.B.	301122
R7		220K ±5% 1/2W A.B.	301143
R8		5.1K ±5% 1/2W A.B.	301104
R9		30K ±5% 1/2W A.B.	301122
R10		30K ±5% 1/2W A.B.	301122
R11		220K ±5% 1/2W A.B.	301143
R12		5.1K ±5% 1/2W A.B.	301104
R13		30K ±5% 1/2W A.B.	301122
R14		220K ±5% 1/2W A.B.	301143
R15		5.1K ±5% 1/2W A.B.	301104
R16		30K ±5% 1/2W A.B.	301122
R17		220K ±5% 1/2W A.B.	301143
R18		5.1K ±5% 1/2W A.B.	301104
R19		120K ±5% 1/2W A.B.	301137
R20		5.1K ±5% 1/2W A.B.	301104
R21		30K ±5% 1/2W A.B.	301122
R22		220K ±5% 1/2W A.B.	301143
R23		5.1K ±5% 1/2W A.B.	301104

TABLE OF REPLACEABLE PARTS - SUB-ASS'Y

STROBE GEN I LOGIC CARD

	Reference	Description	BEC Part No.
R24	Resistor, Comp.	30K ±5% 1/2W A.B.	301122
R25	"	220K ±5% 1/2W A.B.	301143
R26	"	5.1K ±5% 1/2W A.B.	301104
R27	"	120K ±5% 1/2W A.B.	301137
R28	"	5.1K ±5% 1/2W A.B.	301104

TABLE OF REPLACEABLE PARTS - SUB-ASS'Y

STROBE GEN II LOGIC CARD

	Reference	Description	BEC Part No.
C1	Capacitor	.001μF 200V ±10% Sprague 192P	234039
C2	Capacitor	.001μF 200V ±10% Sprague 192P	234039
C3	Capacitor	.01μF 200V ±10% Sprague 192P	234027
C4	Capacitor	.001μF 200V ±10% Sprague 192P	234039
CR1	Diode	1N456A G.I.	530051
CR2	Diode	1N456A G.I.	530051
Q1-Q11	Transistor	2N404T.I.	528119
R1	Resistor, Comp.	5.1K ±5% 1/2W A.B.	301104
R2		30K ±5% 1/2W A.B.	301122
R3		220K ±5% 1/2W A.B.	301143
R4		5.1K ±5% 1/2W A.B.	301104
R5		30K ±5% 1/2W A.B.	301122
R6		220K ±5% 1/2W A.B.	301143
R7		30K ±5% 1/2W A.B.	301122
R8		220K ±5% 1/2W. A.B.	301143
R9		5.1K ±5% 1/2W A.B.	301104
R10		30K ±5% 1/2W A.B.	301122
R11		220K ±5% 1/2W A.B.	301143
R12		220K ±5% 1/2W A.B.	301143
R13		30K ±5% 1/2W A.B.	301122
R14		30K ±5% 1/2W A.B.	301122
R15		5.1K ±5% 1/2W A.B.	301104
R16		220K ±5% 1/2W A.B.	301143
R17		30K ±5% 1/2W A.B.	301122
R18		30K ±5% 1/2W A.B.	301122
R19		220K ±5% 1/2W A.B.	301143
R20		5.1K ±5% 1/2W A.B.	301104

STROBE GEN. II LOGIC CARD

Reference		Description	BEC Part No.
R21	Resistor, Comp.	30K ± 5% 1/2W A.B.	301122
R22		220K ± 5% 1/2W A.B.	301143
R23		5.1K ± 5% 1/2W A.B.	301104
R24		30K ± 5% 1/2W A.B.	301122
R25		5.1K ± 5% 1/2W A.B.	301104
R26		220K ± 5% 1/2W A.B.	301143
R27		30K ± 5% 1/2W A.B.	301122
R28		120K ± 5% 1/2W A.B.	301137
R29		5.1K ± 5% 1/2W A.B.	301104
R30		30K ± 5% 1/2W A.B.	301122
R31		220K ± 5% 1/2W A.B.	301143
R32		5.1K ± 5% 1/2W A.B.	301104
R33		30K ± 5% 1/2W A.B.	301122
R34		220K ± 1/2W A.B.	301143
R35		5.1K ± 5% 1/2W A.B.	301104
R36		120K ± 5% 1/2W A.B.	301137
R37		5.1K ± 5% 1/2W A.B.	301104

TABLE OF REPLACEABLE PARTS - SUB ASS'Y

TEMPORARY MEMORY LOGIC CARD

Reference		Description	BEC Part No.
Q1-Q10	Transistor	2N404 T.I.	528009
R1	Resistor, Comp.	5.1K ± 5% 1/2W A.B.	301104
R2		30K ± 5% 1/2W A.B.	301122
R3		220K ± 5% 1/2W A.B.	301143
R4		30K ± 5 % 1/2W A.B.	301122
R5		30K ± 5% 1/2W A.B.	301122
R6		30K ± 5% 1/2W A.B.	301122
R7		220K ± 5% 1/2W A.B.	301143
R8		5.1K ± 5% 1/2W A.B.	301104
R9		5.1K ± 5% 1/2W A.B.	301104
R10		30K ± 5% 1/2W A.B.	301122
R11		220K ± 5% 1/2W A.B.	301143
R12		30K ± 5% 1/2W A.B.	301122
R13		30K ± 5% 1/2W A.B.	301122
R14		220K ± 5% 1/2W A.B.	301143
R15		30K ± 5% 1/2W A.B.	301122
R16		5.1K ± 5% 1/2W A.B.	301104
R17		30K ± 5% 1/2W A.B.	301122
R18		30K ± 5% 1/2W A.B.	301122
R19		220K ± 5% 1/2W A.B.	301143
R20		5.1K ± 5% 1/2W A.B.	301104
R21		5.1K ± 5% 1/2W A.B.	301104
R22		30K ± 5% 1/2W A.B.	301122
R23		30K ± 5% 1/2W A.B.	301122
R24		220K ± 5% 1/2W A.B.	301143
R25		30K ± 5% 1/2W A.B.	301122
R26		30K ± 5% 1/2W A.B.	301122
R27		220K ± 5% 1/2W A.B.	301143

TABLE OF REPLACEABLE PARTS - SUB-ASS'Y

TEMPORARY MEMORY LOGIC CARD

Reference		Description	BEC Part No.
R28	Resistor, Comp.	5.1K 5% 1/2W A.B.	301104
R29		5.1K 5% 1/2W A.B.	301104
R30		30K 5% 1/2W A.B.	301122
R31		30K 5% 1/2W A.B.	301122
R32		220K 5% 1/2W A.B.	301143
R33		30K 5% 1/2W A.B.	301122
R34		30K 5% 1/2W A.B.	301122
R35		30K 5% 1/2W A.B.	301122
R36		5.1K 5% 1/2W A.B.	301104
R37		30K 5% 1/2W A.B.	301122
R38		220K 5% 1/2W A.B.	301143
R39		5.1K 5% 1/2W A.B.	301104

TABLE OF REPLACEABLE PARTS - SUB-ASS'Y

FLIP FLOP II CARD

	Reference	Description	BEC Part No.
Q1-Q6	Transistor	2N404 T.I.	528009
R1	Resistor, Comp.	3K 1/2W 5% A.B.	301098
R2		220K 1/2W 5% A.B.	301143
R3		30K 1/2W 5% A.B.	301122
R4		30K 1/2W 5% A.B.	301122
R5		30K 1/2W 5% A.B.	301122
R6		30K 1/2W 5% A.B.	301122
R7		30K 1/2W 5% A.B.	301122
R8		30K 1/2W 5% A.B.	301122
R9		220K 1/2W 5% A.B.	301143
R10		3K 1/2W 5% A.B.	301098
R11		3K 1/2W 5% A.B.	301098
R12		220K 1/2W 5% A.B.	301143
R13		30K 1/2W 5% A.B.	301122
R14		30K 1/2W 5% A.B.	301122
R15		30K 1/2W 5% A.B.	301122
R16		30K 1/2W 5% A.B.	301122
R17		30K 1/2W 5% A.B.	301122
R18		30K 1/2W 5% A.B.	301122
R19		220K 1/2W 5% A.B.	301143
R20		3K 1/2W 5% A.B.	301098
R21		3K 1/2W 5% A.B.	301098
R22		220K 1/2W 5% A.B.	301143
R23		30K 1/2W 5% A.B.	301122
R24		30K 1/2W 5% A.B.	301122
R25		30K 1/2W 5% A.B.	301122
R26		30K 1/2W 5% A.B.	301122
R27		30K 1/2W 5% A.B.	301122

TABLE OF REPLACEABLE PARTS - SUB-ASS'Y

FLIP FLOP II CARD

	Reference	Description	BEC Part No.
R28	Resistor, Comp.	30K 1/2W 5% A.B.	301122
R29	↓	220K 1/2W 5% A.B.	301143
R30	↓	3K 1/2W 5% A.B.	301098

TABLE OF REPLACEABLE PARTS - SUB ASS'Y

FLIP FLOP III CARD

Reference		Description	BEC Part No.
Q1-Q4	Transistor	2N404 T. I.	528009
R1	Resistor, Comp.	3K 1/2W 5% A.B.	301098
R2		220K 1/2W 5% A.B.	301143
R3		30K 1/2W 5% A.B.	301122
R4		30K 1/2W 5% A.B.	301122
R5		30K 1/2W 5% A.B.	301122
R6		30K 1/2W 5% A.B.	301122
R7		30K 1/2W 5% A.B.	301122
R8		30K 1/2W 5% A.B.	301122
R9		30K 1/2W 5% A.B.	301122
R10		30K 1/2W 5% A.B.	301122
R11		30K 1/2W 5% A.B.	301122
R12		220K 1/2W 5% A.B.	301143
R13		3K 1/2W 5% A.B.	301098
R14		3K 1/2W 5% A.B.	301098
R15		220K 1/2W 5% A.B.	301143
R16		30K 1/2W 5% A.B.	301122
R17		30K 1/2W 5% A.B.	301122
R18		30K 1/2W 5% A.B.	301122
R19		30K 1/2W 5% A.B.	301122
R20		30K 1/2W 5% A.B.	301122
R21		30K 1/2W 5% A.B.	301122
R22		30K 1/2W 5% A.B.	301122
R23		30K 1/2W 5% A.B.	301122
R24		30K 1/2W 5% A.B.	301122
R25		220K 1/2W 5% A.B.	301143
R26		3K 1/2W 5% A.B.	301098

TABLE OF REPLACEABLE PARTS - SUB-ASS'Y

DELAY III CARD ASS'Y

	Reference	Description	BEC Part No.
C1A/B	Capacitor, Met Paper	0.22 µf +20% 100V Electron Products	236005
C2A/B		2 µf 25V Sprague	283183
C3	Mylar	0.01 µf ±10% 200V Sprague	234027
C4		0.1 µf ±10% 200V Sprague	234009
C5A/B	Met Paper	0.22 µf ± 20 % 100V Electron Products	235005
C6	Mylar	0.01 µf ±10% 200V Sprague	234027
Q1-Q9	Transistor	2N404 T.I.	528003
R1	Resistor, Comp.	30K 1/2W 5% A.B.	301122
R2		220K 1/2W 5% A.B.	301143
R3		30K 1/2W 5% A.B.	301122
R4		220K 1/2W 5% A.B.	301143
R5		5.1K 1/2W 5% A.B.	301104
R6		5.1K 1/2W 5% A.B.	301104
R7		30K 1/2W 5% A.B.	301122
R8		30K 1/2W 5% A.B.	301122
R9		100K 1/2W 5% A.B.	301139
R10		10K 1/2W 5% A.B.	301113
R11		5.1K 1/2W 5% A.B.	301104
R12		5.1K 1/2W 5% A.B.	301104
R13		100K 1/2W 5% A.B.	301139
R14		100K 1/2W 5% A.B.	301139
R15		5.1K 1/2W 5% A.B.	301104
R16		5.1K 1/2W 5% A.B.	301104
R17		30K 1/2W 5% A.B.	301122
R18		220K 1/2W 5% A.B.	301143
R19		5.1K 1/2W 5% A.B.	301104
R20		30K 1/2W 5% A.B.	301122

TABLE OF REPLACEABLE PARTS - SUB-ASS'Y

DELAY III CARD ASS'Y

	Reference	Description	BEC Part No.
R21	Resistor, Comp.	100K 1/2W 5% A.B.	301135
R22		5.1K 1/2W 5% A.B.	301104
R23		100K 1/2W 5% A.B.	301135
R24		5.1K 1/2W 5% A.B.	301104

TABLE OF REPLACEABLE PARTS - SUB-ASS'Y

ONE SHOT MULTI-VIBRATOR II CARD

	Reference	Description	BEC Part No.
C1-C5	Capacitor, Mylar	0.01µf 10% 200V Sprague	234027
Q1-Q10	Transistor	2N404 T.I.	528009
R1	Resistor, Comp.	30K 1/2W 5% A.B.	301122
R2		220K 1/2W 5% A.B.	301143
R3		30K 1/2W 5% A.B.	301122
R4		220K 1/2W 5% A.B.	301143
R5		5.1K 1/2W 5% A.B.	301104
R6		5.1K 1/2W 5% A.B.	301104
R7		100K 1/2W 5% A.B.	301135
R8		100K 1/2W 5% A.B.	301135
R9		3K 1/2W 5% A.B.	301098
R10		3K 1/2W 5% A.B.	301098
R11		30K 1/2W 5% A.B.	301122
R12		220K 1/2W 5% A.B.	301143
R13		30K 1/2W 5% A.B.	301122
R14		220K 1/2W 5% A.B.	301143
R15		5.1K 1/2W 5% A.B.	301104
R16		5.1K 1/2W 5% A.B.	301104
R17		100K 1/2W 5% A.B.	301135
R18		100K 1/2W 5% A.B.	301135
R19		3K 1/2W 5% A.B.	301098
R20		3K 1/2W 5% A.B.	301098
R21		30K 1/2W 5% A.B.	301122
R22		220K 1/2W 5% A.B.	301143
R23		5.1K 1/2W 5% A.B.	301104
R24		100K 1/2W 5% A.B.	301135
R25		3K 1/2W 5% A.B.	301098
R26		30K 1/2W 5% A.B.	301122

TABLE OF REPLACEABLE PARTS - SUB-ASS'Y

DRIVER II LOGIC CARD ASS'Y

	Reference	Description	BEC Part No.
Q1-Q9	Transistor	2N404 Texas Instrument	528018
R1	Resistor, Comp.	10K 1/2W 5% A.B.	301111
R2		220K 1/2W 5% A.B.	301143
R3		220K 1/2W 5% A.B.	301143
R4		10K 1/2W 5% A.B.	301111
R5		10K 1/2W 5% A.B.	301111
R6		10K 1/2W 5% A.B.	301111
R7		220K 1/2W 5% A.B.	301143
R8		220K 1/2W 5% A.B.	301143
R9		10K 1/2W 5% A.B.	301111
R10		10K 1/2W 5% A.B.	301111
R11		220K 1/2W 5% A.B.	301143
R12		220K 1/2W 5% A.B.	301143
R13		10K 1/2W 5% A.B.	301111
R14		10K 1/2W 5% A.B.	301111
R15		220K 1/2W 5% A.B.	301143
R16		220K 1/2W 5% A.B.	301143
R17		10K 1/2W 5% A.B.	301111
R18	"	220K 1/2W 5% A.B.	301143

TABLE OF REPLACEABLE PARTS - SUB-ASS'Y

OR/NOT GATES II LOGIC CARD ASSEMBLY

	Reference	Description	BEC Part No.
Q1-Q7	Transistor	2N404, Texas Instrument	528009
R1	Resistor, Comp.	30K 1/2W 5% AB	301122
R2		30K 1/2W 5% AB	301122
R3		30K 1/2W 5% AB	301122
R4		30K 1/2W 5% AB	301122
R5		220K 1/2W 5% AB	301143
R6		220K 1/2W 5% AB	301143
R7		5.1K 1/2W 5% AB	301104
R8		5.1K 1/2W 5% AB	301104
R9		30K 1/2W 5% AB	301122
R10		30K 1/2W 5% AB	301122
R11		30K 1/2W 5% AB	301122
R12		30K 1/2W 5% AB	301122
R13		220K 1/2W 5% AB	301143
R14		220K 1/2W 5% AB	301143
R15		5.1K 1/2W 5% AB	301104
R16		5.1K 1/2W 5% AB	301104
R17		30K 1/2W 5% AB	301122
R18		30K 1/2W 5% AB	301122
R19		30K 1/2W 5% AB	301122
R20		30K 1/2W 5% AB	301122
R21		220K 1/2W 5% AB	301143
R22		220K 1/2W 5% AB	301143
R23		5.1K 1/2W 5% AB	301104
R24		5.1K 1/2W 5% AB	301104
R25		30K 1/2W 5% AB	301122

TABLE OF REPLACEABLE PARTS - SUB-ASS'Y

OR/NOT GATES II LOGIC CARD ASSEMBLY

Reference	Description	BBC Part No.
R26	Resistor, Comp. 30K 1/2W 5% AB	301122
R27	220K 1/2W 5% AB	301143
R28	5.1K 1/2W 5% AB	301104
R29	30K 1/2W 5% AB	301122
R30	30K 1/2W 5% AB	301122
R31	30K 1/2W 5% AB	301122

TABLE OF REPLACEABLE PARTS - SUB-ASS'Y

DRIVER-INVERTER LOGIC CARD ASSEMBLY

Reference		Description	BEC Part No.
Q1-49	Transistor	2N404, Texas Insturment	528018
R1	Resistor, Comp.	10K 1/2W 5% AB	301111
R2		220K 1/2W 5% AB	301143
R3		220K 1/2W 5% AB	301143
R4		30K 1/2W 5% AB	301122
R7		10K 1/2W 5% AB	301111
R8		220K 1/2W 5% AB	301143
R9		220K 1/2W 5% AB	301143
R10		10K 1/2W 5% AB	301111
R13		30K 1/2W 5% AB	301122
R14		220K 1/2W 5% AB	301143
R15		220K 1/2W 5% AB	301143
R16		30K 1/2W 5% AB	301122
R18		3K 1/2W 5% AB	301098
R19		30K 1/2W 5% AB	301122
R20		220K 1/2W 5% AB	301143
R21		220K 1/2W 5% AB	301143
R22		30K 1/2W 5% AB	301122
R23		3K 1/2W 5% AB	301098
R24		3K 1/2W 5% AB	201098
R25		10K 1/2W 5% AB	301111
R26		220K 1/2W 5% AB	301143

TABLE OF REPLACEABLE PARTS - POWER SUPPLY ASS'Y

Automatic Resistance Trimming Bridge

	Reference	Description	BEC Part
PS1	Power Supply Sub Ass'y		BX5137-62
PS2	Power Supply	PMC M-12.0-0.375	421250
PS3	Power Supply Sub Ass'y	Isolated Bridge Supply	BX5137-71
P1	Plug, Male	Cinch-Jones P-308CCT	477119
P2	Plug, Male	Cinch-Jones P-308CCT	477119
P3	Plug	Cinch-Jones S-304CCT	479157
CB1	Terminal Board Ass'y		BX5135-31
CB2	Terminal Board Ass'y		BX5135-33
CB3	Terminal Board Ass'y		BX5137-63
J1	Receptacle, 1 Pin.	Female Cinch-Jones S-315-EB	479172
J2	Receptacle, 8 Pin.	Female Cinch-Jones S-308-AB	479124
LC1	Linecord	Miller Special	568101
R1	Resistor	100K 1/2W 5% AB	301135
T1	Transformer, 115V 60 cps	Magnetic Winding	446034

1260
b

TABLE OF REPLACEABLE PARTS--SUB ASS'Y

POWER SUPPLY AMP. BOARD (BX5135-31)

	Reference	Description	BEC Part No.
C8	Capacitor	1 uf ± 10% 200 V. Aerovox	230104
C9		1 uf ± 10% 200V. Aerovox	230104
C10		50 uf 25V Sprague	283158
C11		50 uf 20V Sprague	283158
C35		.1 uf ± 20% 200V Sprague 192P	234005
C36		.1 uf ± 20% 200V Sprague 192P	234005
Q4	Transistor	2N1304 T. I.	528011
Q5		2N1304 T. I.	528011
Q9		2N404 T. I.	528009
Q10		2N404 T. I.	528009
R12	Resistor, Comp.	1.2K ± 5% 1/2W A.B.	301089
R13		15K ± 5% 1/2W A.B.	301115
R14		3K ± 5% 1/2W A. B.	301098
R15		7.5K ± 5% 1/2W A.B.	301108
R16	Potentiometer	2.5K Ohmite Pot Linear Locking	311211
R17	Resistor, Comp.	5.6 ± 5% 1/2W A. B.	301105
R23		1.2K ± 5% 1/2W A.B.	301089
R24		3K ± 5% 1/2W A.B.	301098
R25		15K ± 5% 1/2W A.B.	301115
R26		5.6K ± 5% 1/2W A.B.	301105
R27	Potentiometer	2.5K Ohmite Pot Linear Locking	311211
R28	Resistor, Comp.	7.5K ± 5% 1/2W A.B.	301108
Z8	Diode	1N821 Motorola	530050
Z9	Diode	1N821 Motorola	530050

TABLE OF REPLACEABLE PARTS - SUB ASS'Y

POWER SUPPLY REG. BOARD (BX5135-33)

	Reference	Description	BEC Part No.
Q1	Transistor	2N404 T.I.	528009
Q2		2N1304 T.I.	528011
Q3		2N2219 Motorola	528014
Q6		2N404 T.I.	528009
Q7		2N1309 T.I.	528012
Q8		2N1304 T.I.	528011
R8	Resistor, Comp.	1.2K ± 5% 1/2W A.B.	301089
R9		1K ± 5% 1/2W A.B.	301087
R10		15K ± 5% 1/2W A.B.	301115
R11		10K ± 5% 1/2W A.B.	301111
R19		1K ± 5% 1/2W A.B.	301087
R20		1.2K ± 5% 1/2W A.B.	301089
R21		10K ± 5% 1/2W A.B.	301111
R22		10K ± 5% 1/2W A.B.	301111
Z4-Z7	Diode	1N456A G.I.	530051

TABLE OF REPLACEABLE PARTS - SUB-ASS'Y

POWER SUPPLY BOARD (CB3) (PART NO. BX5137-63)

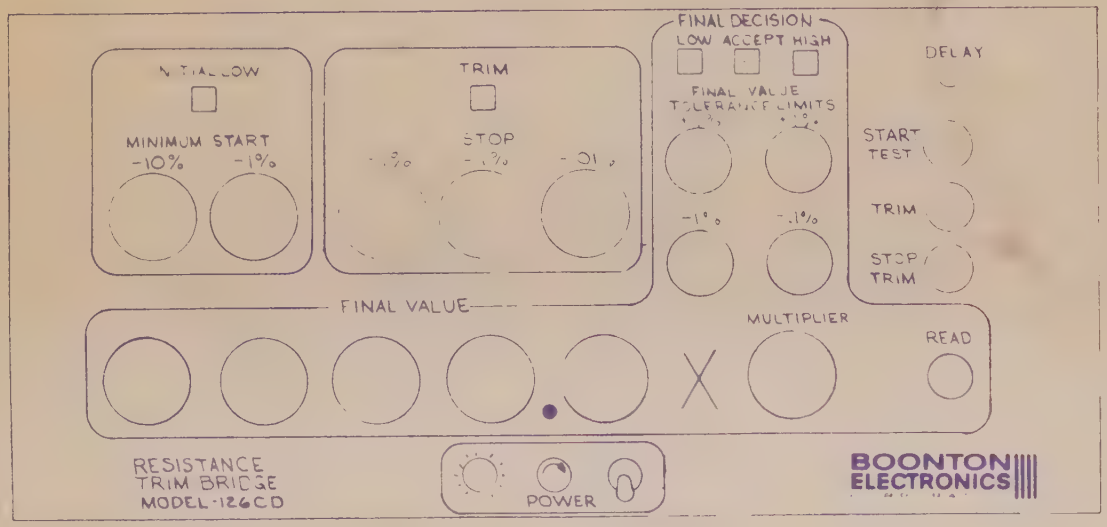
Reference		Description	BEC Part No.
CR1	Diode	1N2069, Motorola	530053
CR2		1N2069, Motorola	530053
Cr3		1N2069, Motorola	530053
CR4		1N2069, Motorola	530053
R1	Resistor, Comp.	390Ω 1/2W	301077
R2		1K 2W A.B.	304067
R3		33Ω 1/2W A.B.	301051
R4		33Ω 1/2W A.B.	301051
R5		Delete	
R6		Delete	
R7		Delete	
R8		Delete	
C1	Capacitor	250 µf 50V	283157
C2		150 µf 150V	283156
C3		150 µf 150V	283156
C4		250 µf 50V	283157
VR-1	Diode, Zener	1.5M20Z10, Motorola	530047

TABLE OF REPLACEABLE PARTS - SUB-ASS'Y

ISOLATED BRIDGE POWER SUPPLY ASS'Y (PART NO. BX5137-71)

	Reference	Description	BEC Part No.
C1	Capacitor	250 µf 50V	283157
C2	↓	250 µf 50V	283157
C3	↓	205 µf 50V	283157
CR-1	Diode	1N2069	530053
CR-2	↓	1N2069	530053
R1	Resistor	120Ω 5W	310176
R2	↓	120Ω 5W	310176
R3	↓	120Ω 5W	310176
T1	Transformer	Power	446036

REVISIONS				
ZONE	REV	DATE	SIG	DESCRIPTION
				M, 08



USED ON	TOLERANCES		
126CD	2 PLACE DECIMAL .010 3 PLACE DECIMAL .005 UNLESS OTHERWISE SPECIFIED		
	SCALE:		
	DRN		3-11-08
	CKD		3-1-08
	APP		

BOONTON ELECTRONICS PARSIPPANY NEW JERSEY

PANEL LAYOUT

SH. OF BX5137-1

BOONTON ELECTRONICS
PARSIPPANY NEW JERSEY

BLOCK DIAGRAM

CX5137-46 B

	DRN	CKD	APP
	CGB 11-9-67	11-16-67	

TOLERANCES
2 PLACE DECIMAL .010
3 PLACE DECIMAL .005
UNLESS OTHERWISE SPECIFIED

USED ON

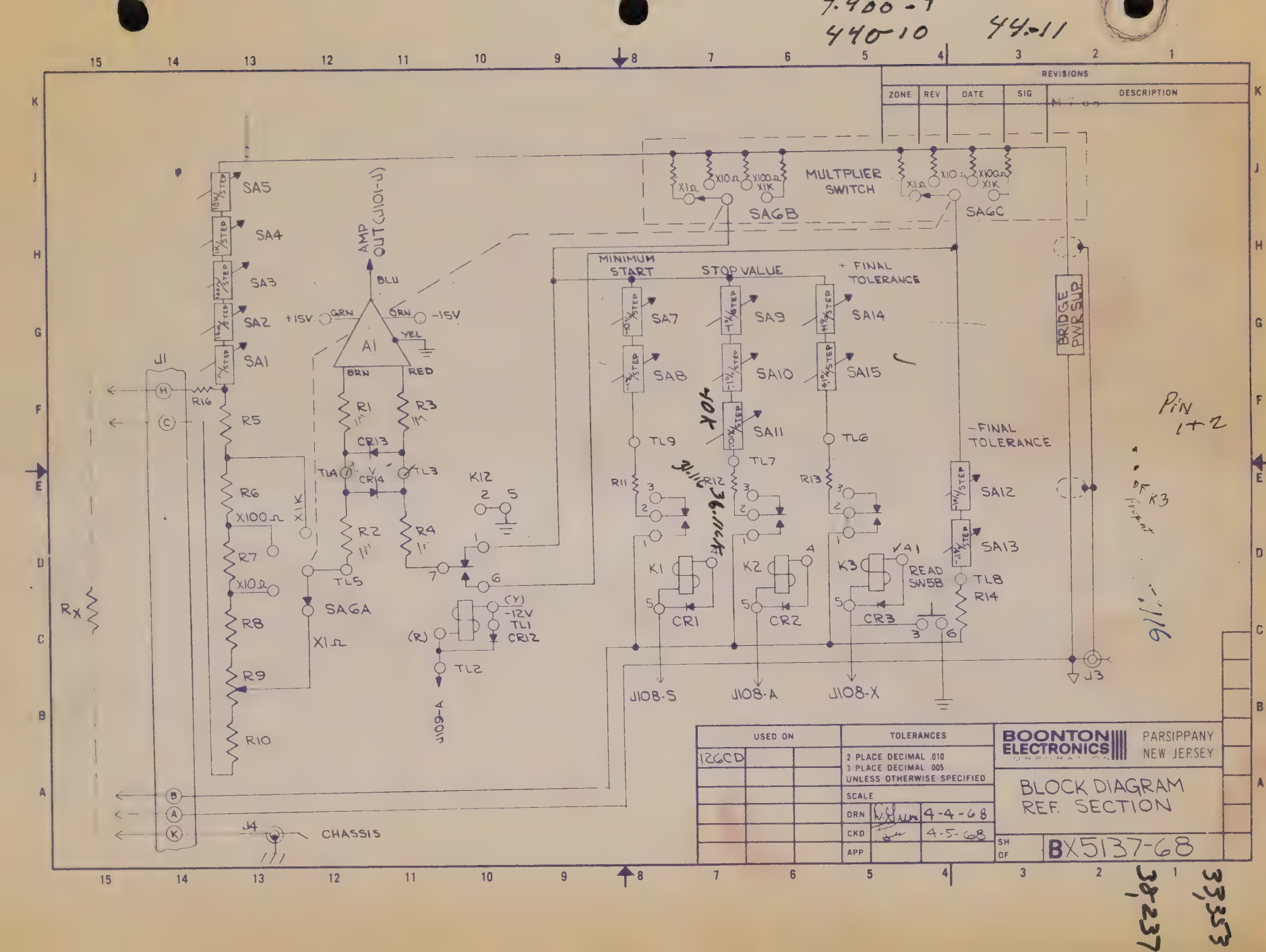
12&CD

SCALE:

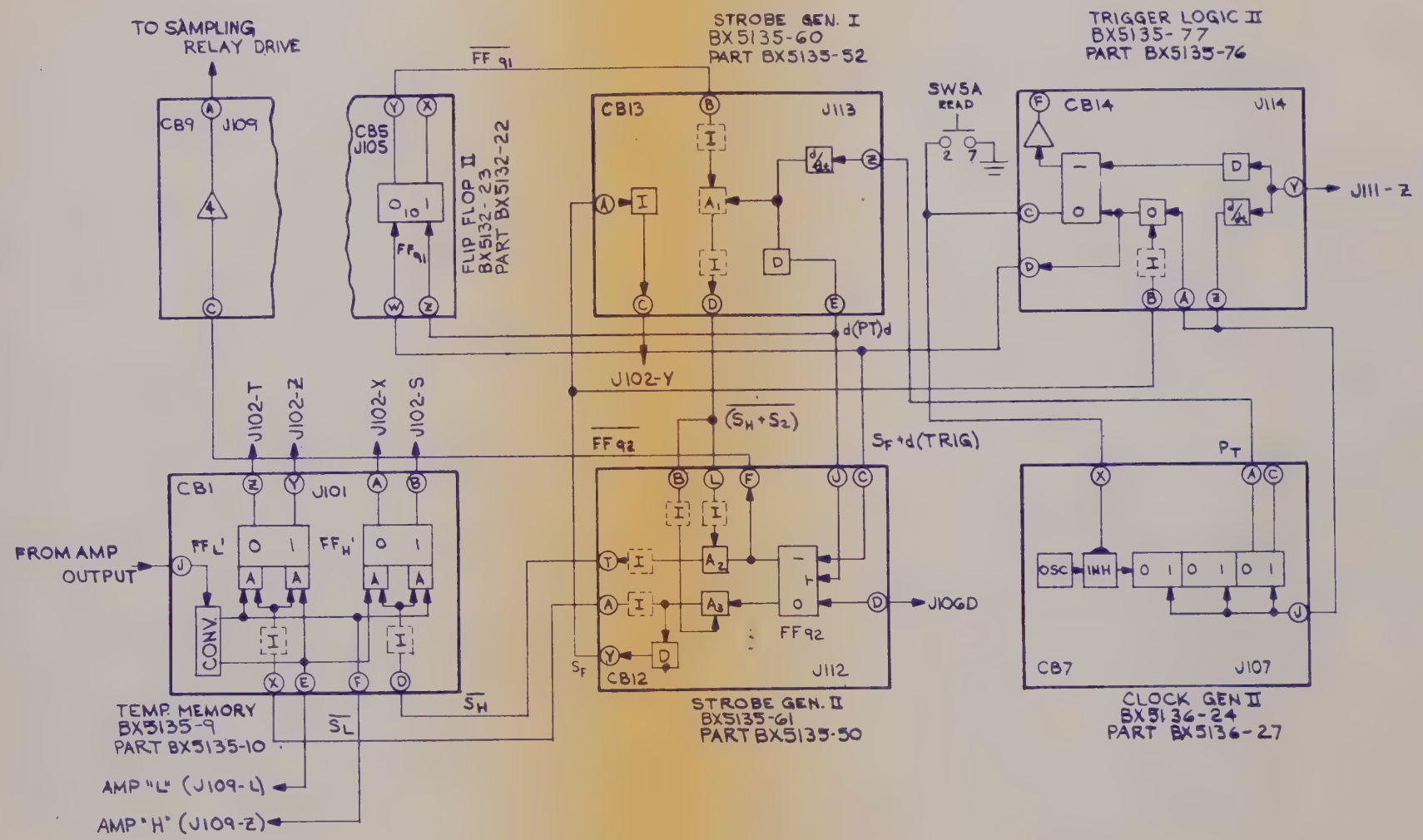
REVISIONS

ZONE	REV.	DATE	APP.	DESCRIPTION

INITIAL CHECK K1
INITIAL LOW DECISION
FINAL REJECT
FINAL CHECK
TRIM
FROM COMPARATOR
EXT START TEST
START TEST RELAY
9 LOADS
RL-3K
25MS DELAY
MIN INITIAL TOL
AMP "L" → CB9-J
AMP "H" → CB9-X
AMP "L"
AMP "H"
CB1
LOW
HIGH
REJ. LOW
ACCEPT
TEST COMPLETE (J2-11,12)
LOW(J2-4,5)
HIGH(J2-4,7)
LOW(J2-9,10)
ACCEPT(J2-4,6)
TRIM(J2-1,2,3)
"FINAL VALUE"
STOP VALUE
STOP TRIM
SW1 READ TRIM
SW2 START TEST
SW3 TRIM
SW4 0-12V
SW5 READ TRIM
SW3 B READ
TO "TRIG" (CB14-Y)
N.C.
N.O.

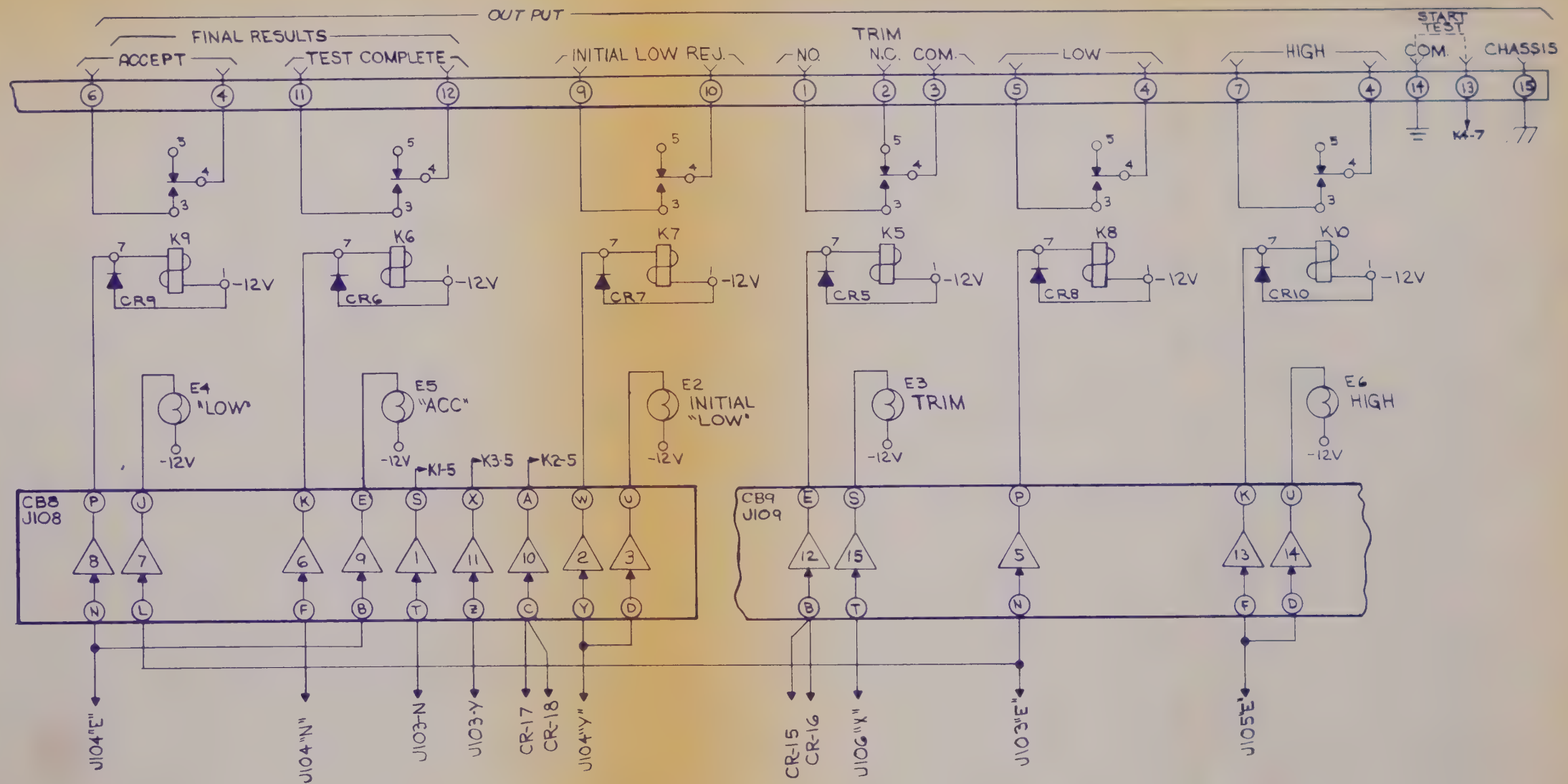

REVISIONS
ZONE REV DATE SIG DESCRIPTION
MULTPLIER SWITCH
SA6B
SA6C
SA5
SA4
SA3
SA2
SA1
AMP OUT (J101-J)
A1
+15V
-15V
J1
R16
R5
R6
X100Ω
R7
X10Ω
R8
R9
R10
Rx
X1Ω
SA6A
R1
R3
CR13
CR14
TL4
TL3
TL5
R2
R4
K12
TL2
J109-A
(Y) -12V TL1 CR12
(R)
MINIMUM START
STOP VALUE
+ FINAL TOLERANCE
SA7
SA8
SA9
SA10
SA11
SA14
SA15
TL9
TL7
TL6
R11
R12
R13
K1
K2
K3
CR1
CR2
CR3
READ SW5B
TL8
R14
-FINAL TOLERANCE
SA12
SA13
BRIDGE PWR SUP
J3
J108-S
J108-A
J108-X
J4
CHASSIS
USED ON
126CD
TOLERANCES
2 PLACE DECIMAL .010
3 PLACE DECIMAL .005
UNLESS OTHERWISE SPECIFIED
SCALE
DRN 4-4-68
CKD 4-5-68
APP
BOONTON ELECTRONICS
PARSIPPANY NEW JERSEY
BLOCK DIAGRAM
REF. SECTION
SH
OF
BX5137-68

REVISIONS M 7 68				
ZONE	REV	DATE	SIG	DESCRIPTION



USED ON	TOLERANCES	BOONTON ELECTRONICS CORPORATION	PARSIPPANY NEW JERSEY
126CD	2 PLACE DECIMAL .010 3 PLACE DECIMAL .005 UNLESS OTHERWISE SPECIFIED	LOGIC DIAGRAM COMPARATOR-SECTION	
	SCALE:		
	DRN D. Green 2-14-68		
	CKD [illegible] 2-14-68	SH. OF	CX5137-28 A
	APP		

REVISIONS				
ZONE	REV.	DATE	SIG.	M 7 68 DESCRIPTION



USED ON	TOLERANCES		
126CD	2 PLACE DECIMAL .010 3 PLACE DECIMAL .005 UNLESS OTHERWISE SPECIFIED		
	SCALE		
	DRN		2-13-68
	CKD		2-19-68
	APP		

BOONTON ELECTRONICS CORPORATION PARSIPPANY NEW JERSEY

LOGIC DIAGRAM CONTROL SECTION

SH. OF CX5137-29-1

REVISIONS				
ZONE	REV	DATE	ENG.	DESCRIPTION
	M	7 68		

J109 "N" (FINAL LOW)
J108 "T" (MIN START PROGRAMING)
J108 "Z" (+FINAL TOLERENCE)
J108 "C"
CR17
TL10
J109 "T"
J108 "N"
J108 "F"
J108 "Y"
J109 "F"

J103 CB3 9
J106 CB6 3
J104 CB4 5
J105 CB5 9

SW4 STOP TRIM
-12V
J112-Y
J112-D
SW3 TRIM
SW5 READ
R15
J109 "B"
CR16
TL12

J114-Y
R15
J111 CB11
J110 CB10
J102 CB2
J109 CB9

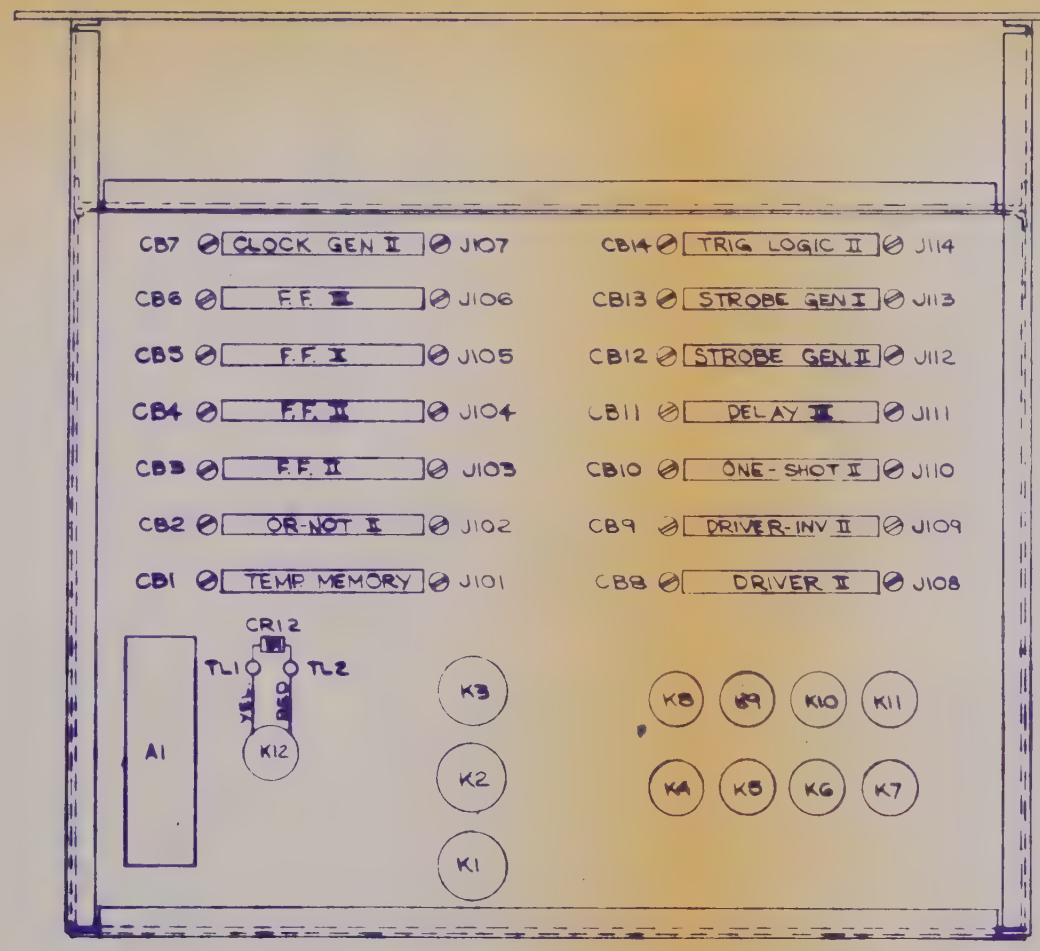
5
4
-12V
3
K4
CR4
CR19
SW2
START TEST
J2-13
TL11
CR18
J108 "C"
K11
CR11
CR15
SW3 TRIM
J109 "B"

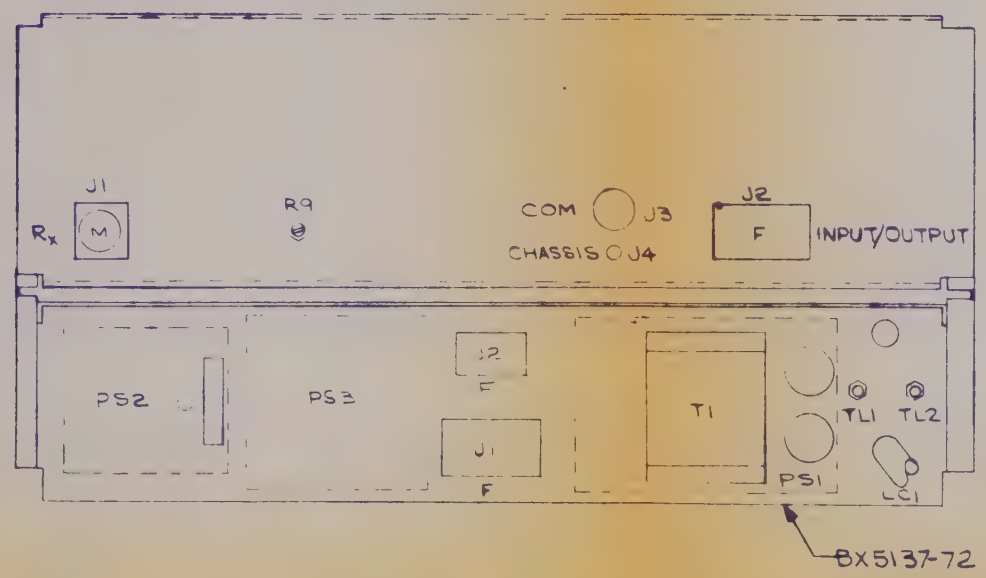
J101-M
J101-B
J101-Y
J101-A
J101-U
J101-F
J101-E

NOTES:
1. FOR OUTPUT CONNECTIONS SEE DWG CX5137-29-1

USED ON	TOLERANCES	BOONTON ELECTRONICS CORPORATION	PARSIPPANY NEW JERSEY
126CD	2 PLACE DECIMAL .010 3 PLACE DECIMAL .005 UNLESS OTHERWISE SPECIFIED	LOGIC DIAGRAM CONTROL SECTION	
	SCALE:		
	DRN D.D. Swan 2-20-68		
	CKD [illegible] 2-21-68		
	APP	SH. OF	CX5137-29-2 B

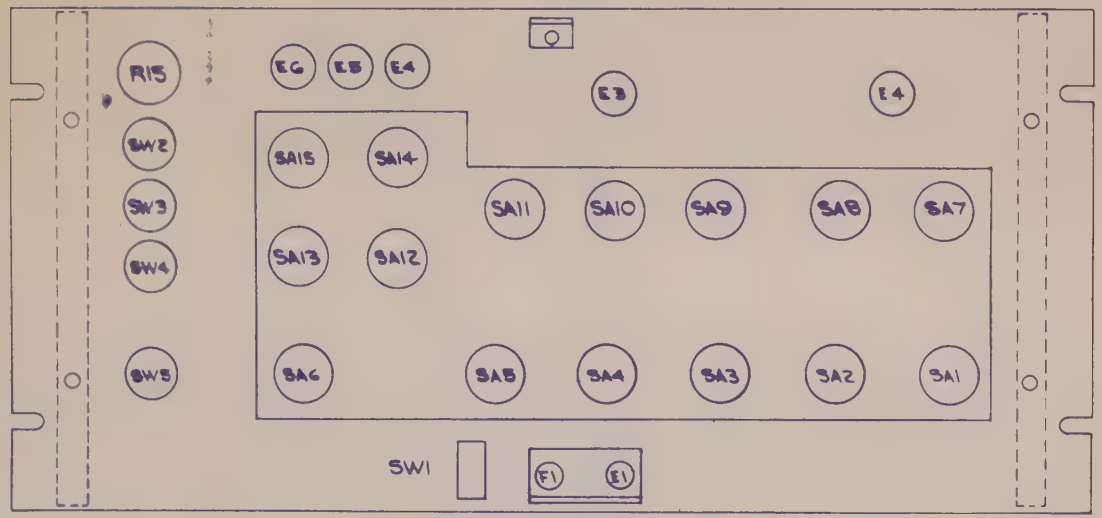
REVISIONS				
ZONE	REV	DATE	SIG.	M 7 68 DESCRIPTION





USED ON	TOLERANCES	BOONTON ELECTRONICS PARSIPPANY NEW JERSEY
126CD	2 PLACE DECIMAL .010 3 PLACE DECIMAL .005 UNLESS OTHERWISE SPECIFIED	COMP. LOC. TOP & REAR VIEW
	SCALE	
	DRN [illegible] 2-20-68	
	CKD [illegible] 2-21-68	
	APP	SH OF CX5137-66

REVISIONS				
ZONE	REV.	DATE	SIG.	DESCRIPTION



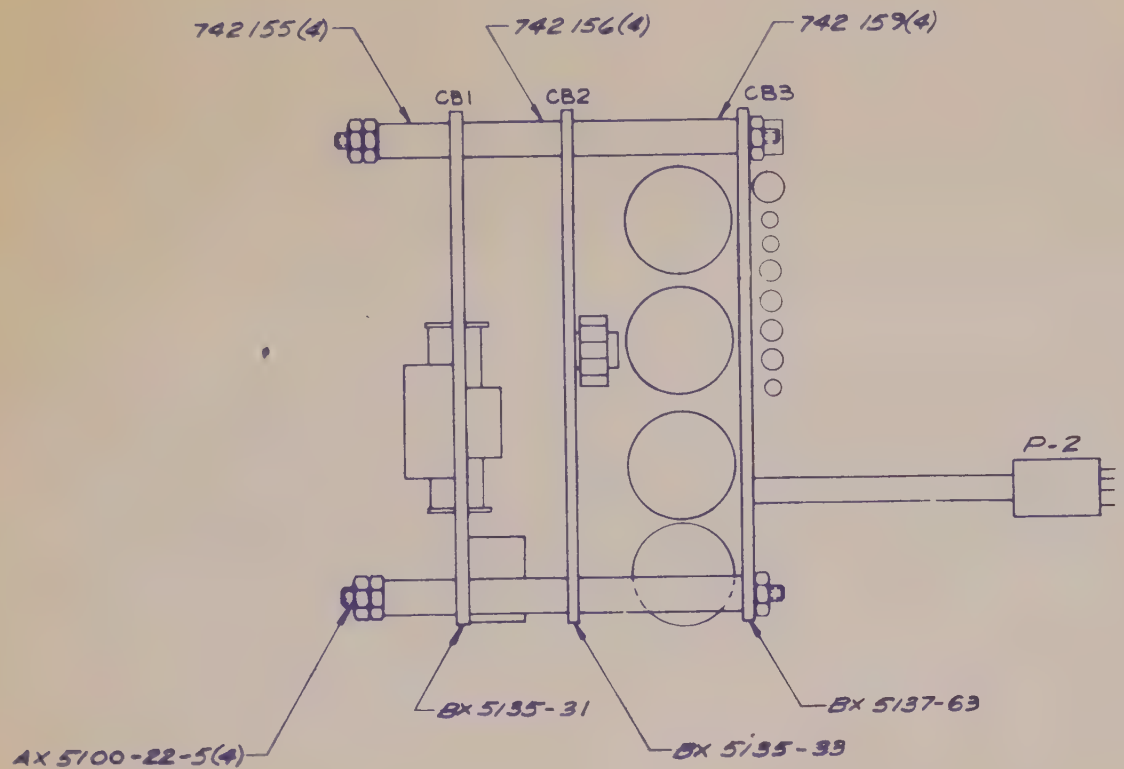
570139

USED ON	TOLERANCES
12GCD	2 PLACE DECIMAL ±.10 3 PLACE DECIMAL ±.05 UNLESS OTHERWISE SPECIFIED
	SCALE:
	DRN 5-16-68
	CKD 5-20-68
	APP

BOONTON ELECTRONICS CORPORATION — PARSIPPANY NEW JERSEY

COMPONENT LOCATION PANEL, REAR, VIEW

DWG. NO. BX5137-30



M766 ISSUE		M 7 6
No	CHANGE	M 7 68

TOLERANCES:

FRACTION ± 1/64,
2 PLACE DECIMAL .010,
3 PLACE DECIMAL .005,
UNLESS OTHERWISE NOTED

SCALE: 1:1

DRN	DWT	12-20-65
CKD		12-21-65
APP		

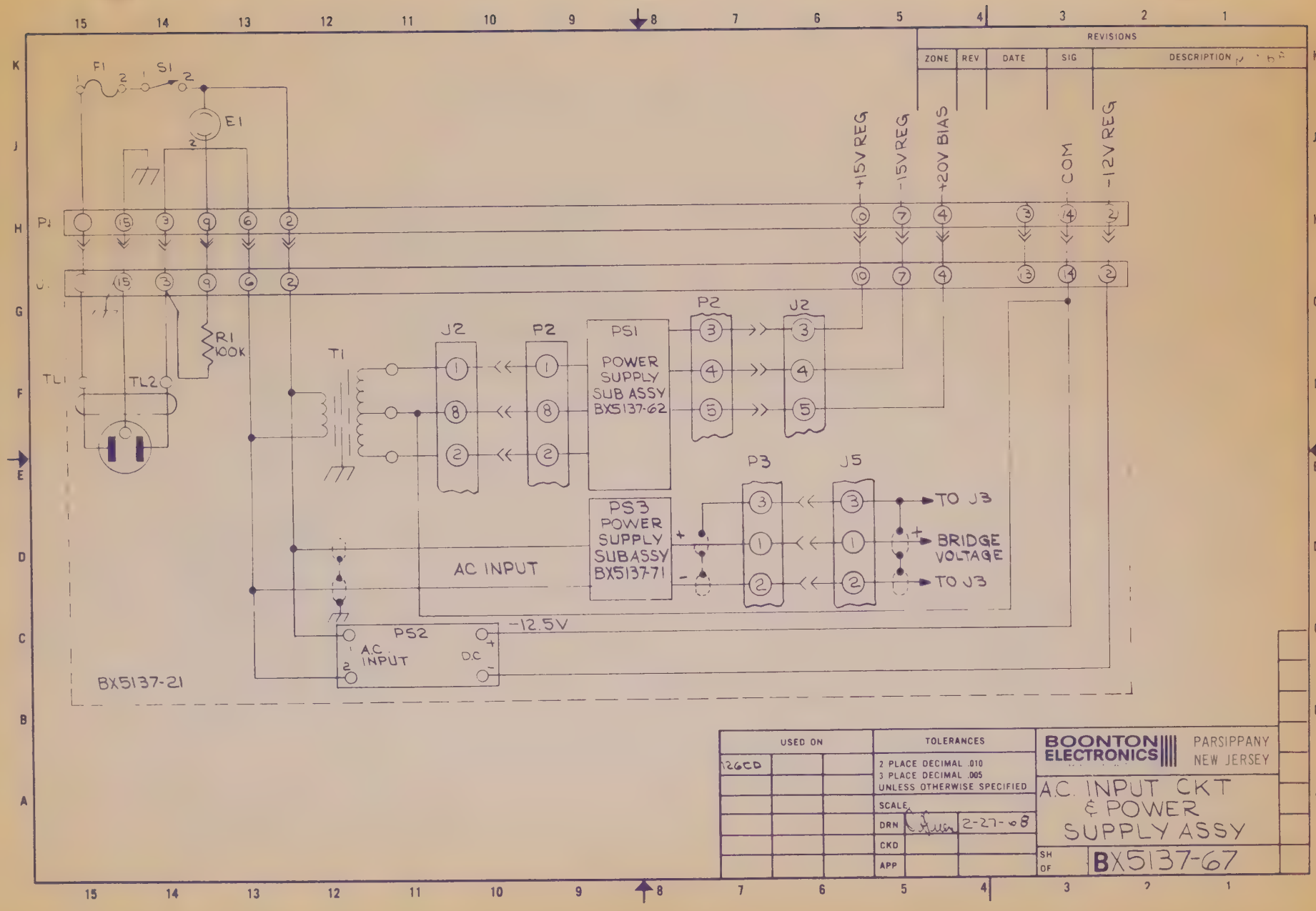
FIRST USED ON:
12L0 1P

(USE WITH ISO. P/S)

BOONTON ELECTRONICS CORP.
MORRIS PLAINS, N. J.

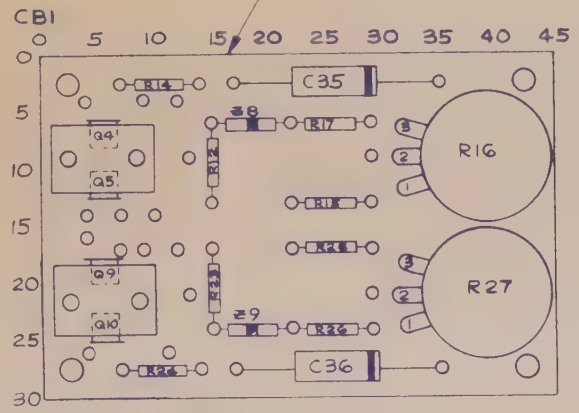
POWER SUPPLY
ASS'Y.

BX 5137-62


REVISIONS
ZONE
REV
DATE
SIG
DESCRIPTION
F1
S1
E1
P1
J1
R1
100K
TL1
TL2
T1
J2
P2
PS1
POWER SUPPLY SUB ASSY BX5137-62
P2
J2
+15V REG
-15V REG
+20V BIAS
COM
-12V REG
P3
J5
PS3
POWER SUPPLY SUBASSY BX5137-71
TO J3
BRIDGE VOLTAGE
TO J3
AC INPUT
-12.5V
PS2
A.C. INPUT
D.C.
BX5137-21
USED ON
126CD
TOLERANCES
2 PLACE DECIMAL .010
3 PLACE DECIMAL .005
UNLESS OTHERWISE SPECIFIED
SCALE
DRN
2-27-68
CKD
APP
BOONTON ELECTRONICS
PARSIPPANY NEW JERSEY
A.C. INPUT CKT & POWER SUPPLY ASSY
SH
OF
BX5137-67

REVISIONS				
ZONE	REV	DATE	SIG	DESCRIPTION

TERMINAL BOARD BX5135-30
PC BOARD BX5135-31



Q4,Q5	2N1304
Q9,Q10	2N404A
R14,R24	3K-1/2W
R16,R27	2.5K-1/2W
R17,R26	5.6K-1/2W
R15,R28	7.5K-1/2W
R12,R23	1.2K-1/2W
Z8 Z9	1N821
C35,C36	.1μF-200V

NOTES:
1. Double sided lugs 510,025 (46).
2. Heat Sink (2) are MX[illegible]5-39. Slots to face outside of board.
3. Transistors Q4,5,9,10 to be wrapped with electrical tape No. 5 before insertion.

USED ON	TOLERANCES		
52B	2 PLACE DECIMAL .010 3 PLACE DECIMAL .005 UNLESS OTHERWISE SPECIFIED		
	SCALE		
	DRN	JAB	9-20-67
	CKD	[illegible]	9-20-67
	APP		

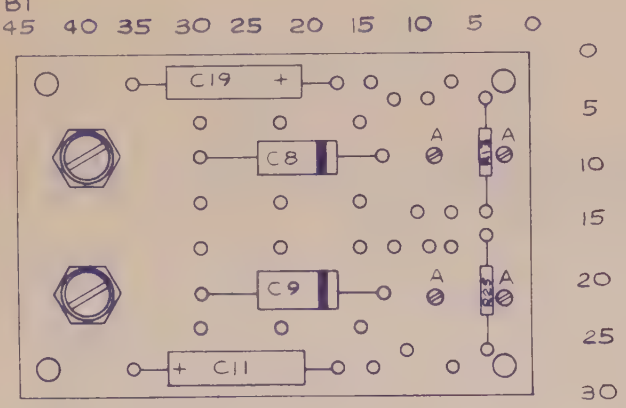
BOONTON ELECTRONICS PARSIPPANY NEW JERSEY

TERM. BD ASSY
COMP LAYOUT-FRONT

SH OF BX5135-31-1

REVISIONS				
ZONE	REV	DATE	SIG.	DESCRIPTION

CB1



C11, C19	50μF-25V
C8, C9	1μF-200V
R13, R25	15K-1/2W

ITEM	DESCRIPTION	QTY
A	4-40 × 3/4 HEAT SINK	4
	MOUNTING SCREWS	
	HOLE LEGEND	

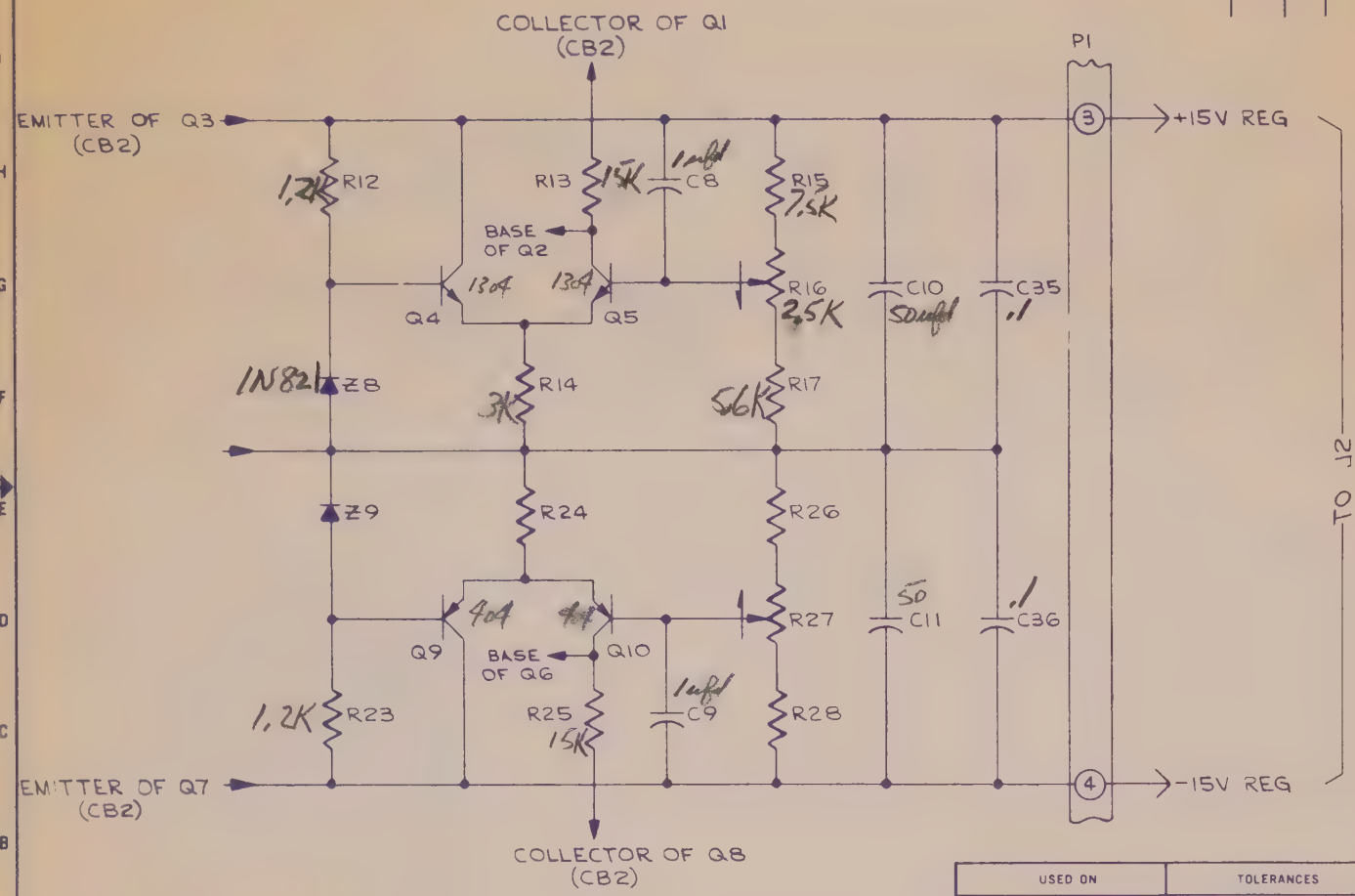
USED ON	TOLERANCES
52B	2 PLACE DECIMAL .010 3 PLACE DECIMAL .005 UNLESS OTHERWISE SPECIFIED
	SCALE:
DRN CQB	9-21-67
CKD	9-22-67
APP	

BOONTON ELECTRONICS PARSIPPANY NEW JERSEY

TERM. BD ASS'Y
COMP LAYOUT-REAR

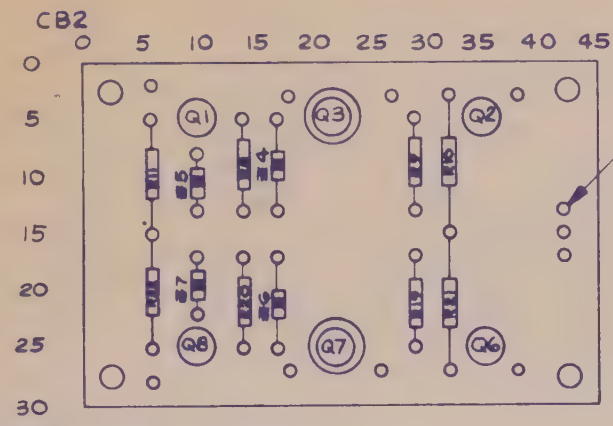
SH. OF BX 5135-31-2

REVISIONS				
ZONE	REV	DATE	SIG	DESCRIPTION
				M 7 68



USED ON	TOLERANCES	BOONTON ELECTRONICS	PARSIPPANY NEW JERSEY
126CD	2 PLACE DECIMAL .010 3 PLACE DECIMAL .005 UNLESS OTHERWISE SPECIFIED	SCHEMATIC, POWER SUPPLY AMP ±15V	
	SCALE		
	DRN [illegible] -11-68		
	CKD [illegible] 1-12-69		
	APP	SH OF	BX5137-53

REVISIONS				
ZONE	REV	DATE	SIG.	DESCRIPTION



TERM. BOARD BX5135-32

NOTE;
HEAT SINKS(2) ARE BIRTCHER 3AL-680-2R

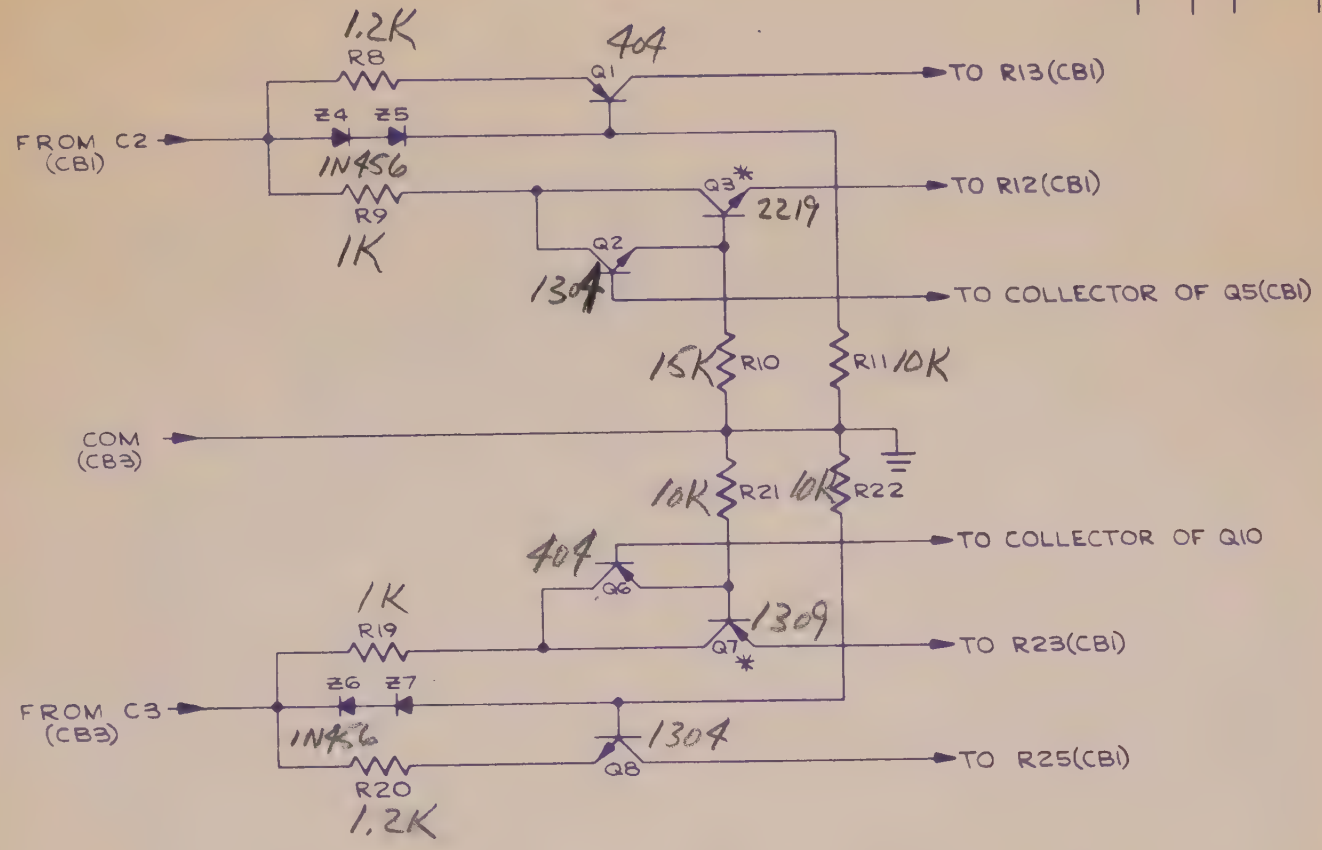
Q1,Q6	2N404A
Q2,Q8	2N1304
Q3	2N2219
Q7	2N1039
R11,R21,R22	10K-1/2W
R9,R19	1K-1/2W
R8,R20	1.2K-1/2W
R10	15K-1/2W
Z4,Z5,Z6,Z7	IN456A

USED ON	TOLERANCES		
528	2 PLACE DECIMAL .010 3 PLACE DECIMAL .005 UNLESS OTHERWISE SPECIFIED		
	SCALE:		
	DRN	CDB	9-19-67
	CKD	[signature]	9-20-67
	APP		

BOONTON ELECTRONICS CORPORATION
PARSIPPANY NEW JERSEY

TERM. BD ASSY
COMP LAYOUT-FRONT

SH. OF BX5135-33-1 A



NOTE;
1) ASTERISK(*) DENOTES TRANSISTORS TO BE USED WITH HEAT SINK.

REVISIONS				
ZONE	REV	DATE	SIG.	DESCRIPTION
			M 7 68	

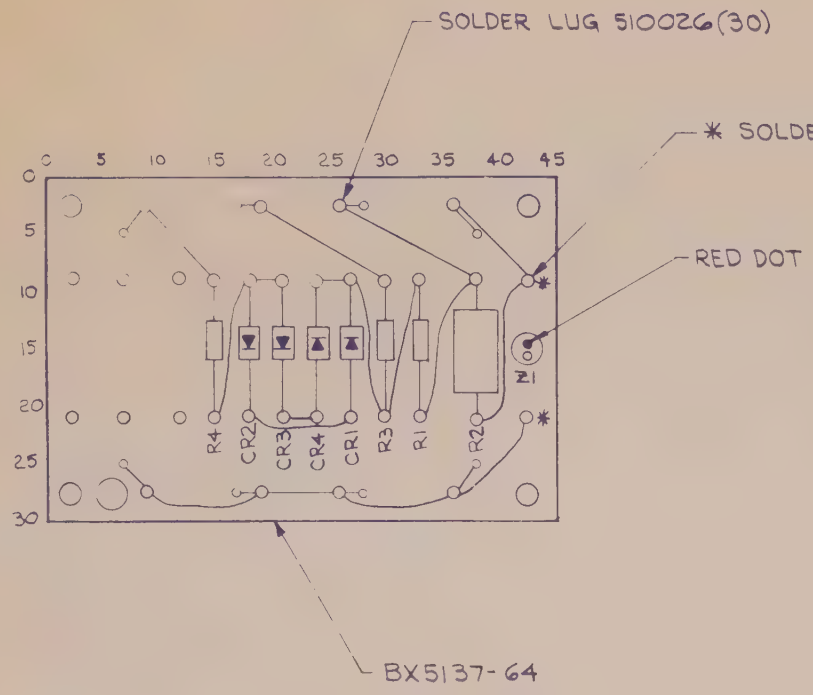
USED ON	TOLERANCES
126CD	2 PLACE DECIMAL .010 3 PLACE DECIMAL .005 UNLESS OTHERWISE SPECIFIED
	SCALE:
	DRN CAB 1-11-68
	CKD 1-12-68
	APP

BOONTON ELECTRONICS CORPORATION
PARSIPPANY NEW JERSEY

SCHEMATIC,
POWER SUPPLY REG ±15V

SH. OF BX5137-54

REVISIONS				
ZONE	REV	DATE	SIG	DESCRIPTION

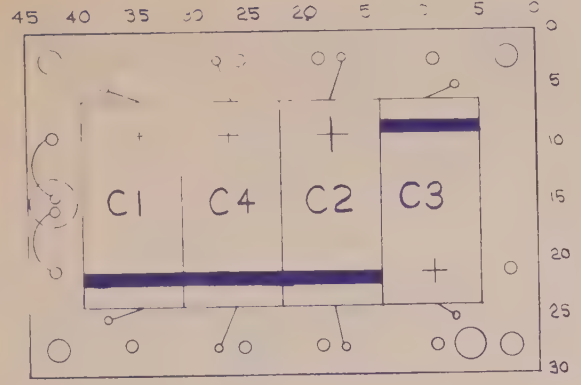


R1	390Ω 1/2W
R2	1K 2W
R3, R4	33Ω 1/2W
Z1	1.5M 20Z10
CR1 THRU CR4	1N2069

NOTE:
1. ALL JUMPERS #18 AWG SOLID TINNED WIRE.
2) ALL SLEEVING #18 AWG TEFLON.

USED ON	TOLERANCES	BOONTON ELECTRONICS	PARSIPPANY NEW JERSEY
126CD	2 PLACE DECIMAL .010 3 PLACE DECIMAL .005 UNLESS OTHERWISE SPECIFIED	COMP. LOC. WIRING (CB3)	
	SCALE		
	DRN 2-12-68		
	CKD 2-12-68		
	APP	SH. OF	BX5137-63-1

REVISIONS				
ZONE	REV	DATE	SIG.	DESCRIPTION



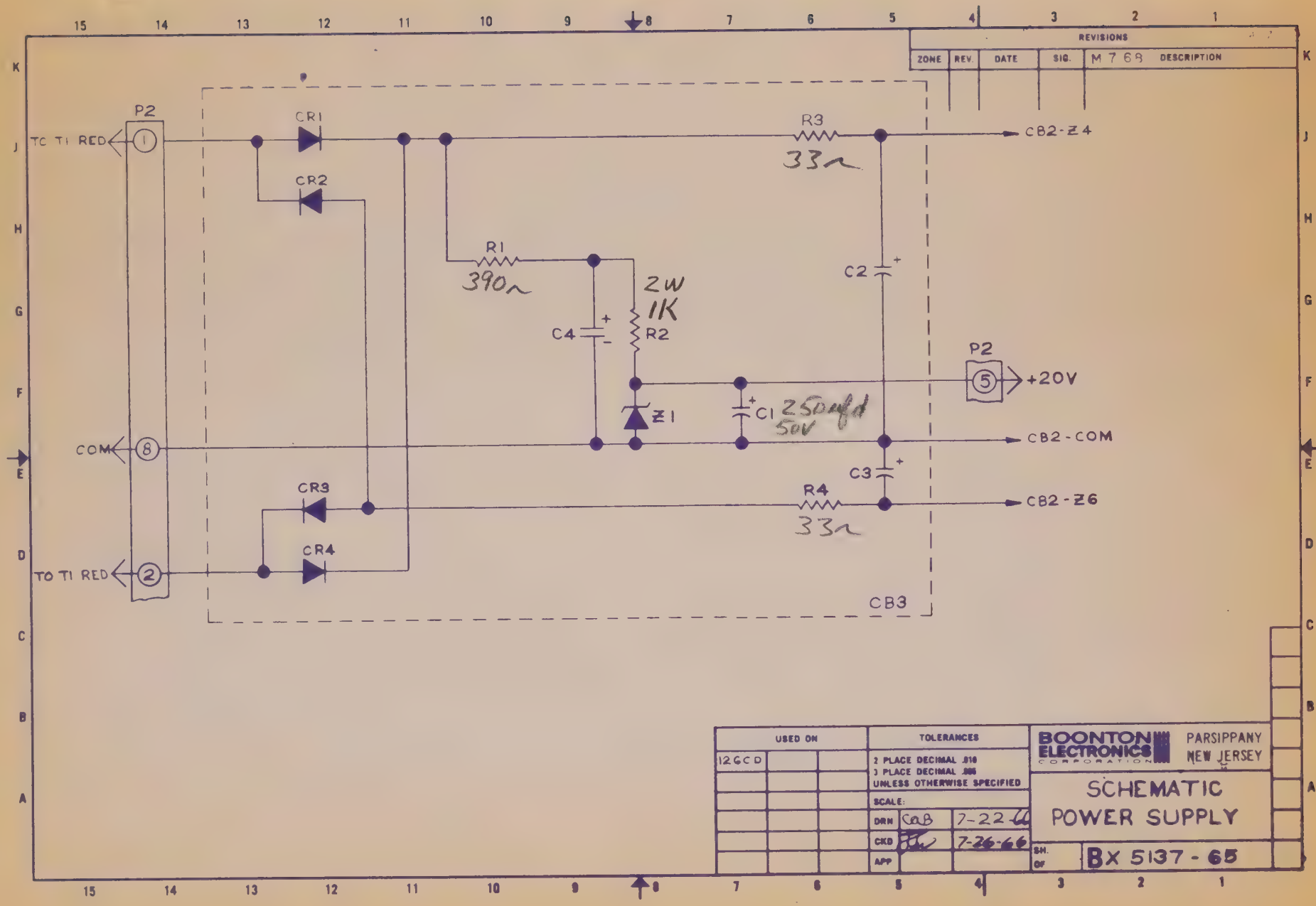
C1, C4	250 Mf 50V
C2, C3	50 Mf 50V

USED ON	TOLERANCES
126CD	2 PLACE DECIMAL .010 3 PLACE DECIMAL .005 UNLESS OTHERWISE SPECIFIED
	SCALE
	DRN 2-12-68
	CKD 2-12-68
	APP

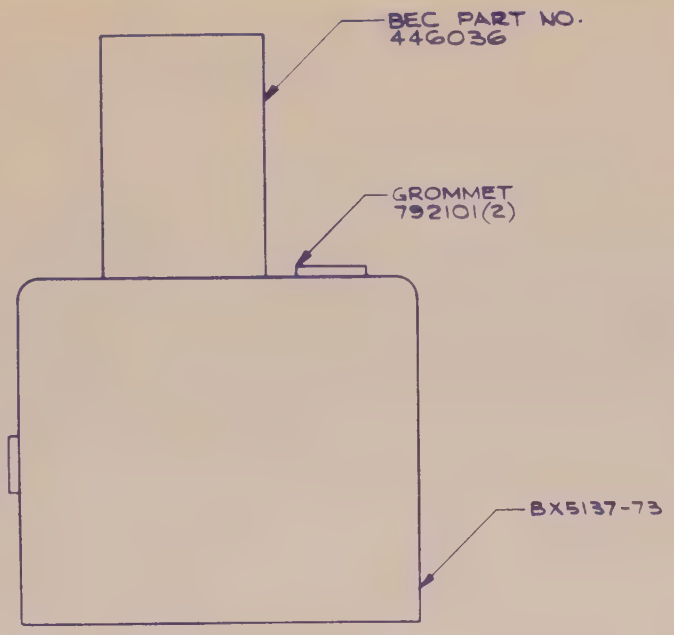
BOONTON ELECTRONICS PARSIPPANY NEW JERSEY

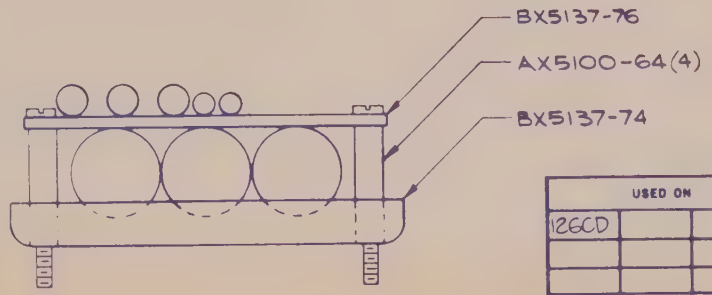
COMP. LOC. WIRING, REAR (CB3)

SH OF BX5137-63-2


REVISIONS
ZONE
REV.
DATE
SIG.
M 7 6 8
DESCRIPTION
P2
TC T1 RED
1
CR1
CR2
R3
33Ω
CB2-Z4
R1
390Ω
2W
1K
R2
C4
C2
P2
5
+20V
Z1
C1 250μfd 50V
COM
8
CB2-COM
C3
CR3
R4
33Ω
CB2-Z6
CR4
TO T1 RED
2
CB3
USED ON
12GCD
TOLERANCES
2 PLACE DECIMAL .010
3 PLACE DECIMAL .005
UNLESS OTHERWISE SPECIFIED
SCALE:
DRN CAB 7-22-66
CKD 7-26-66
APP
BOONTON ELECTRONICS CORPORATION
PARSIPPANY NEW JERSEY
SCHEMATIC
POWER SUPPLY
SH.
OF
BX 5137-65

REVISIONS				
ZONE	REV	DATE	SIG.	M 7 6 9 DESCRIPTION
	A	8/8/69		REMVD 3 AFTER P.S IN TITLE





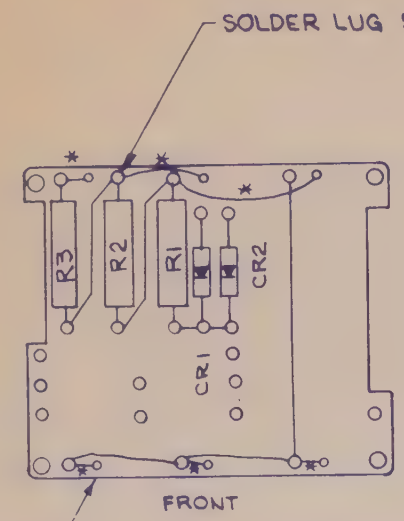
USED ON	TOLERANCES
126CD	2 PLACE DECIMAL .010 3 PLACE DECIMAL .005 UNLESS OTHERWISE SPECIFIED
	SCALE
	DRN 8-9-66
	CKD
	APP

BOONTON ELECTRONICS PARSIPPANY NEW JERSEY

PWR SUPPLY SUB ASSY (SO)

SH. OF BX5137-71 4

REVISIONS				
ZONE	REV.	DATE	ENG.	M768 DESCRIPTION



R1, R2, R3	120Ω 5W
CR1, CR2	IN2069

* NOTE: USE CAPACITOR LEADS

NOTES:
1) ALL JUMPERS #28 AWG SOLID TINNED WIRE.
2) ALL SLEEVING #22 AWG TEFLON.

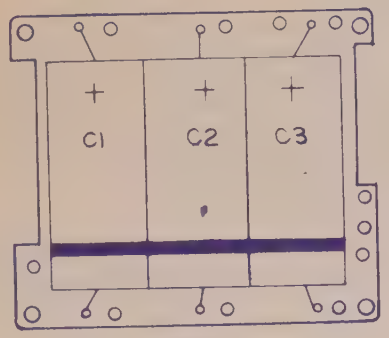
USED ON	TOLERANCES		
122CD	2 PLACE DECIMAL .010 3 PLACE DECIMAL .005 UNLESS OTHERWISE SPECIFIED		
	SCALE:		
	DRN		2-12-68
	CKD		2-14-68
	APP		

BOONTON ELECTRONICS CORPORATION PARSIPPANY NEW JERSEY

PWR SUPPLY
COMP LOC. & WIRING

SH. OF BX5137-76-1

REVISIONS				
ZONE	REV	DATE	SIG.	DESCRIPTION



REAR

C1, C2, C3	250 µf 50V

USED ON		
122CD		

TOLERANCES

2 PLACE DECIMAL .010
3 PLACE DECIMAL .005
UNLESS OTHERWISE SPECIFIED

SCALE.

DRN		2-12-68
CKD		2-14-68
APP		

BOONTON ELECTRONICS
PARSIPPANY NEW JERSEY

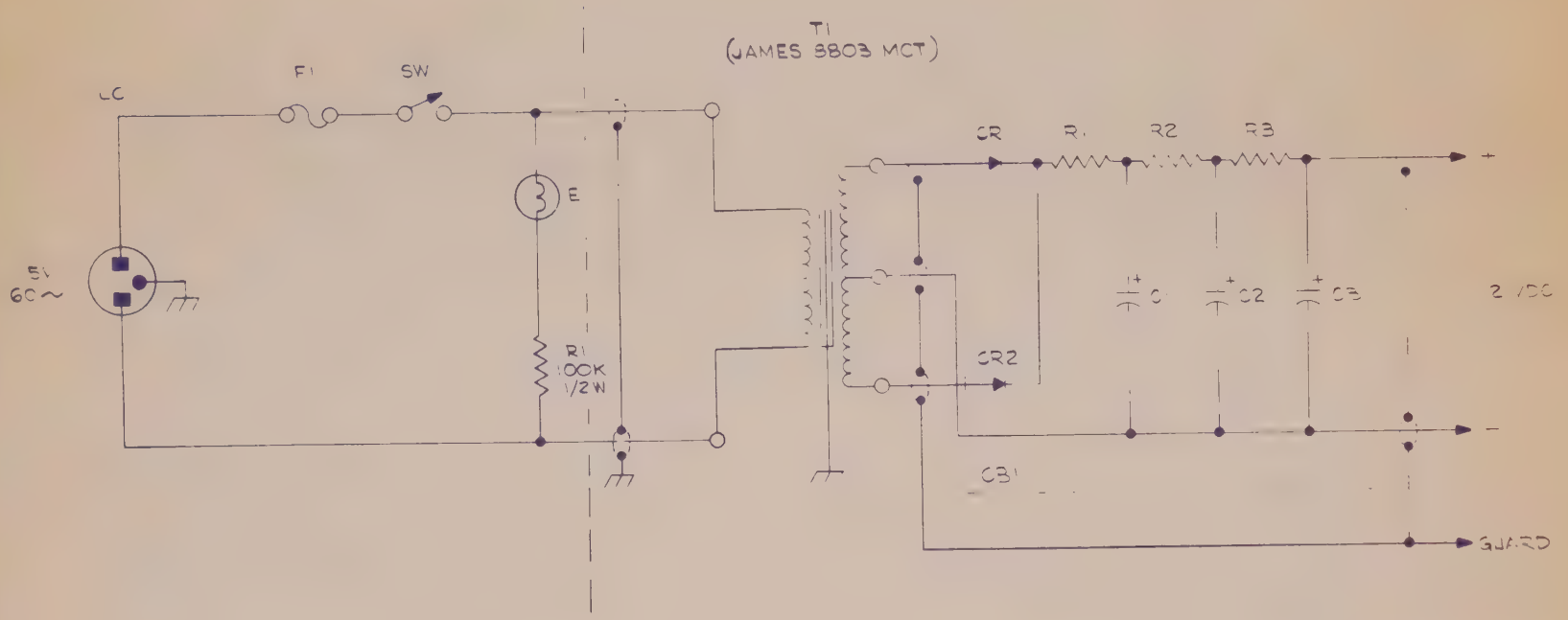
PWR SUPPLY COMP LOC.

SH. OF

BX5137-76-2

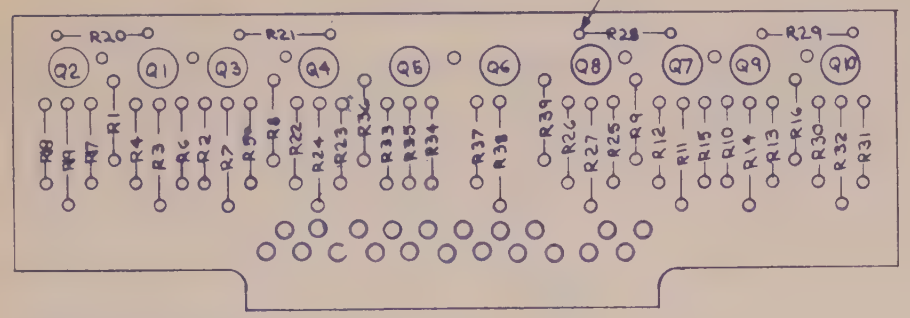
REVISIONS				
ZONE	REV	DATE	SIG	DESCRIPTION

FOR REF



USED ON	TOLERANCES	BOONTON ELECTRONICS	PARSIPPANY NEW JERSEY
122CD	2 PLACE DECIMAL .010 3 PLACE DECIMAL .005 UNLESS OTHERWISE SPECIFIED		
	SCALE		SCHEMATIC PWR SUPPLY
	DRN 6-13-66		
	CKD		
	APP	SH OF	B 5137-77

REVISIONS				M 768
ZONE	REV	DATE	SIG.	DESCRIPTION



52B TEMP MEMORY TERM. BD. 5135-2

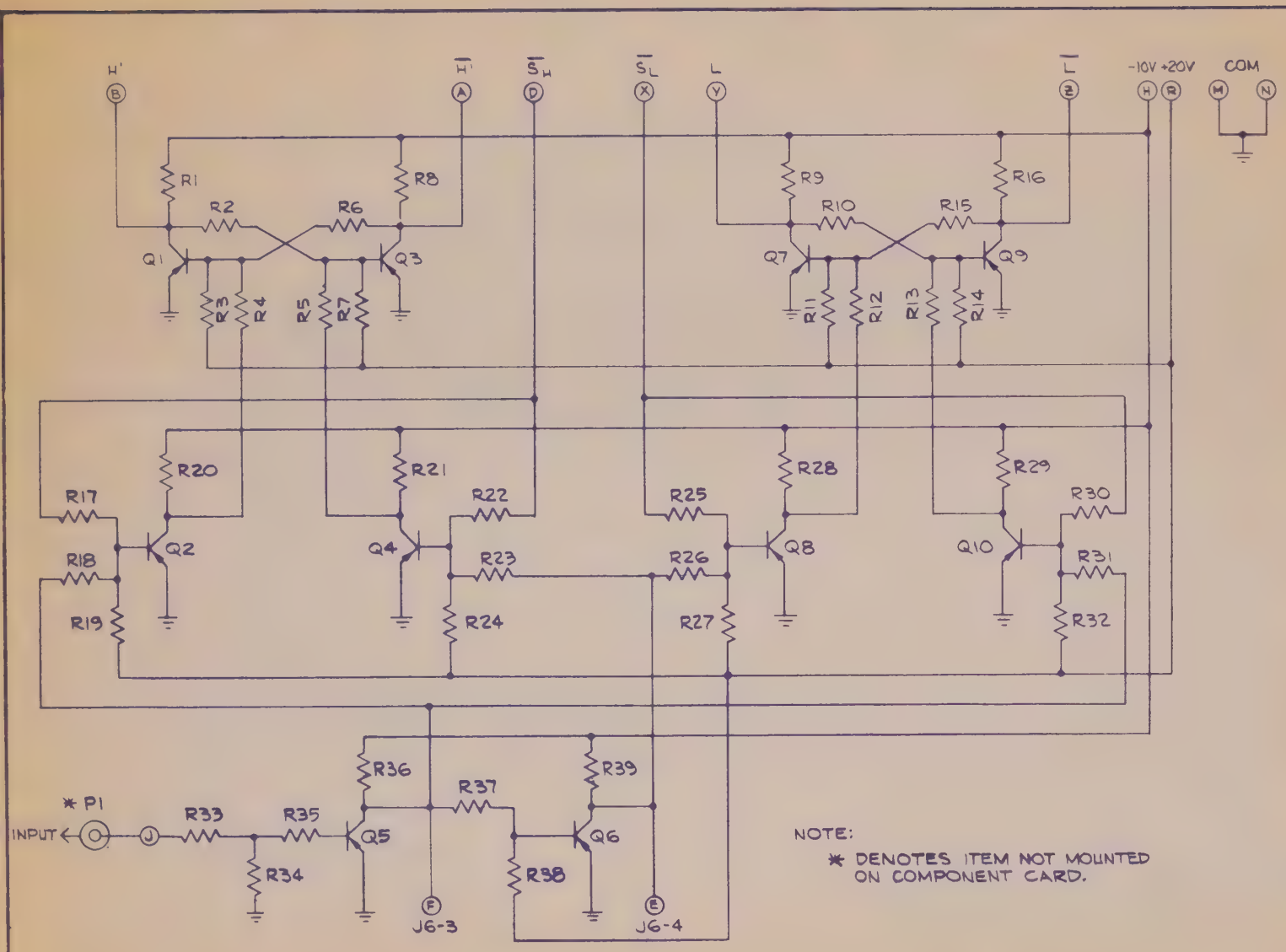
Q1 thru Q10	2N404A
R1, R8, R9, R16, R20, R21, R28, R29, R36, R39.	5.1K 1/2W
R3, R7, R11, R14, R19, R24, R27, R32, R38	220K 1/2W
R2, R4, R5, R6, R10, R12, R13, R15, R17, R18, R22, R23, R25, R26, R30, R31, R33, R34, R35, R37	30K 1/2W

USED ON	TOLERANCES		
528	2 PLACE DECIMAL .010 3 PLACE DECIMAL .005 UNLESS OTHERWISE SPECIFIED		
	SCALE:		
	DRN	K. Hum	2-5-68
	CKD	[illegible]	2-5-68
	APP		

BOONTON ELECTRONICS PARSIPPANY NEW JERSEY

TEMP. MEMORY LOGIC CARD

SH. OF BX5135-10-1



NOTE:

* DENOTES ITEM NOT MOUNTED ON COMPONENT CARD.

ISSUE M7 6
No. M 7 68 CHANGE M 7 67

TOLERANCES:

FRACTION ± 1/64,
2 PLACE DECIMAL .010,
3 PLACE DECIMAL .008,
UNLESS OTHERWISE NOTED

SCALE:

DRN		5-12-65
CKD		
APP		

FIRST USED ON:

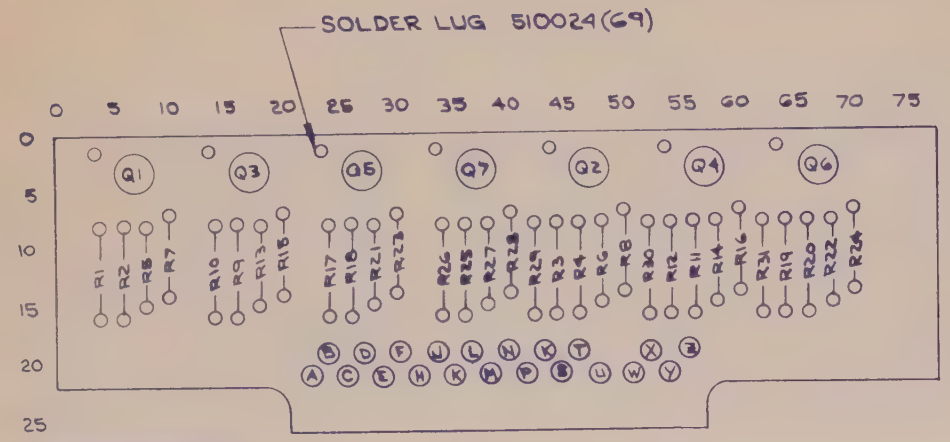
52B

BOONTON ELECTRONICS CORP.
MORRIS PLAINS, N. J.

SCHEMATIC TEMP. MEMORY

B 5135-9

REVISIONS M 7 C 8				
ZONE	REV	DATE	SIG.	DESCRIPTION
	A			ADDED NOTE #1



TERM BD. BX5137-35

OR-NOT

FRONT

Q1 THRU Q7	2N404A
R1,R2,R3,R4,R9, R10,R11,R12,R17, R18,R19,R20,R25, R26,R29,R30,R31	30K 1/2W
R7,R8,R15,R16, R23,R24,R28	5.1K 1/2W
R5,R6,R13,R14, R21,R22,R27	220K 1/2W

NOTE:

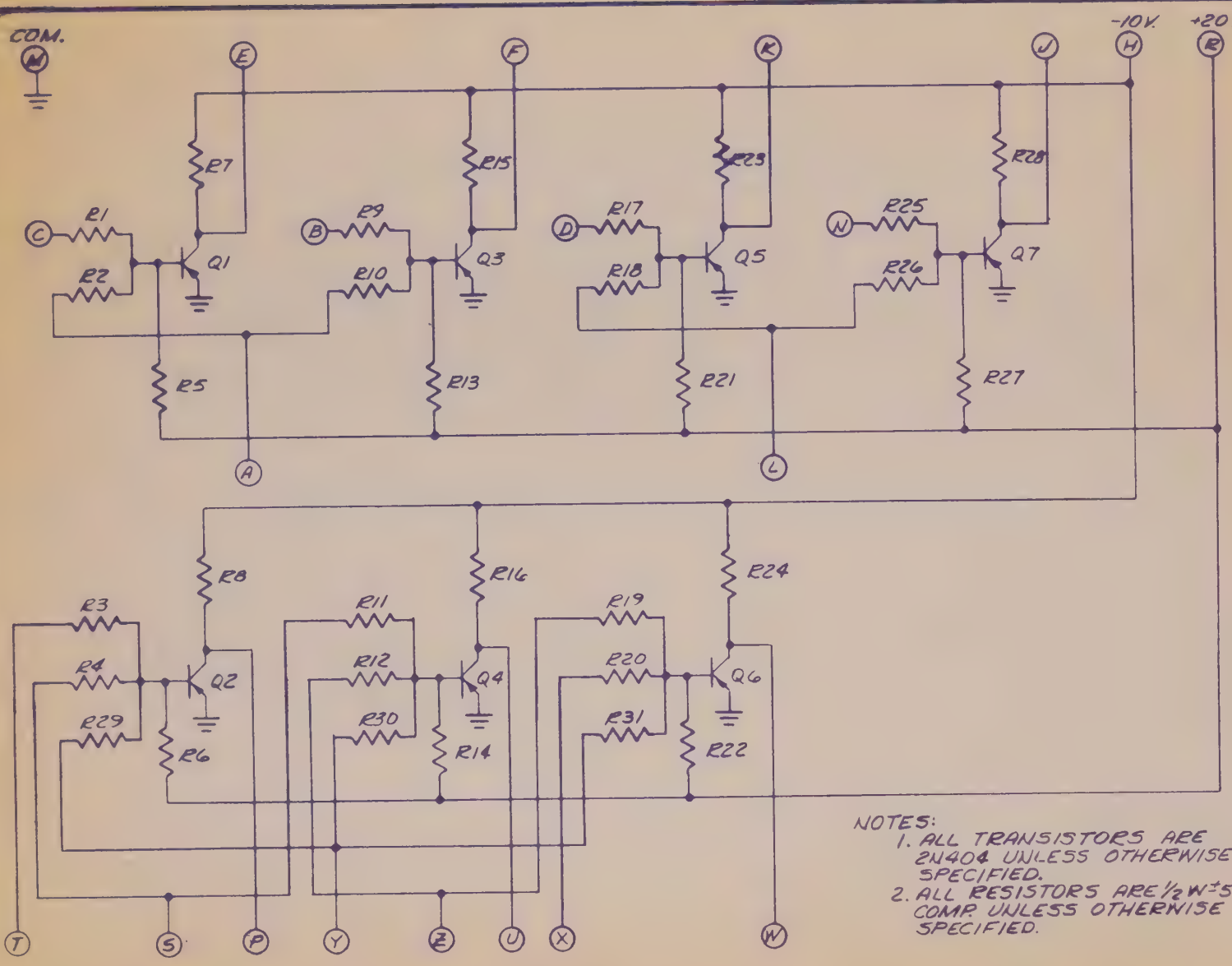
1. ALL COMPONENTS TO BE MOUNTED ON BOTTOM OF TERMINAL.

USED ON	TOLERANCES
126CD	2 PLACE DECIMAL .010 3 PLACE DECIMAL .005 UNLESS OTHERWISE SPECIFIED
	SCALE:
DRN	3-14-68
CKD	3-15-68
APP	

BOONTON ELECTRONICS CORPORATION PARSIPPANY NEW JERSEY

OR-NOT GATES II

SH. OF BX5137-361 A



NOTES:
1. ALL TRANSISTORS ARE 2N404 UNLESS OTHERWISE SPECIFIED.
2. ALL RESISTORS ARE ½W ±5% COMP. UNLESS OTHERWISE SPECIFIED.

M766 ISSUE M 7 67

No.	M 7 68 CHANGE

TOLERANCES:
FRACTION ± 1/64,
2 PLACE DECIMAL .010,
3 PLACE DECIMAL .005,
UNLESS OTHERWISE NOTED

SCALE:

DRN	JPF	12-14-65
CKD		12-14-65
APP		

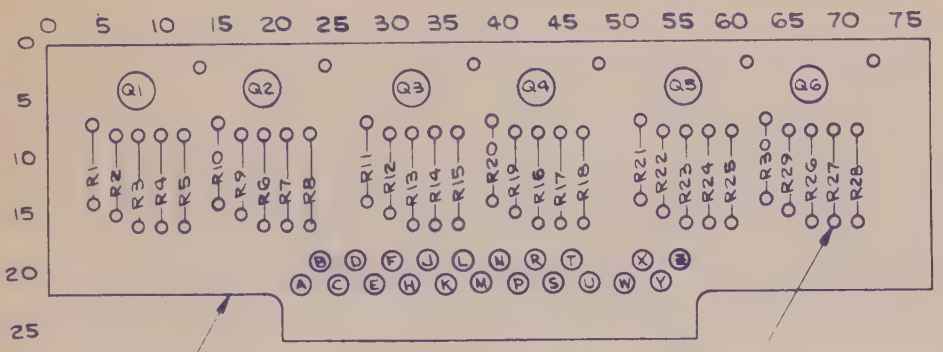
FIRST USED ON:
126CD

BOONTON ELECTRONICS CORP.
MORRIS PLAINS, N. J.

SCHEMATIC OR-NOT GATES II

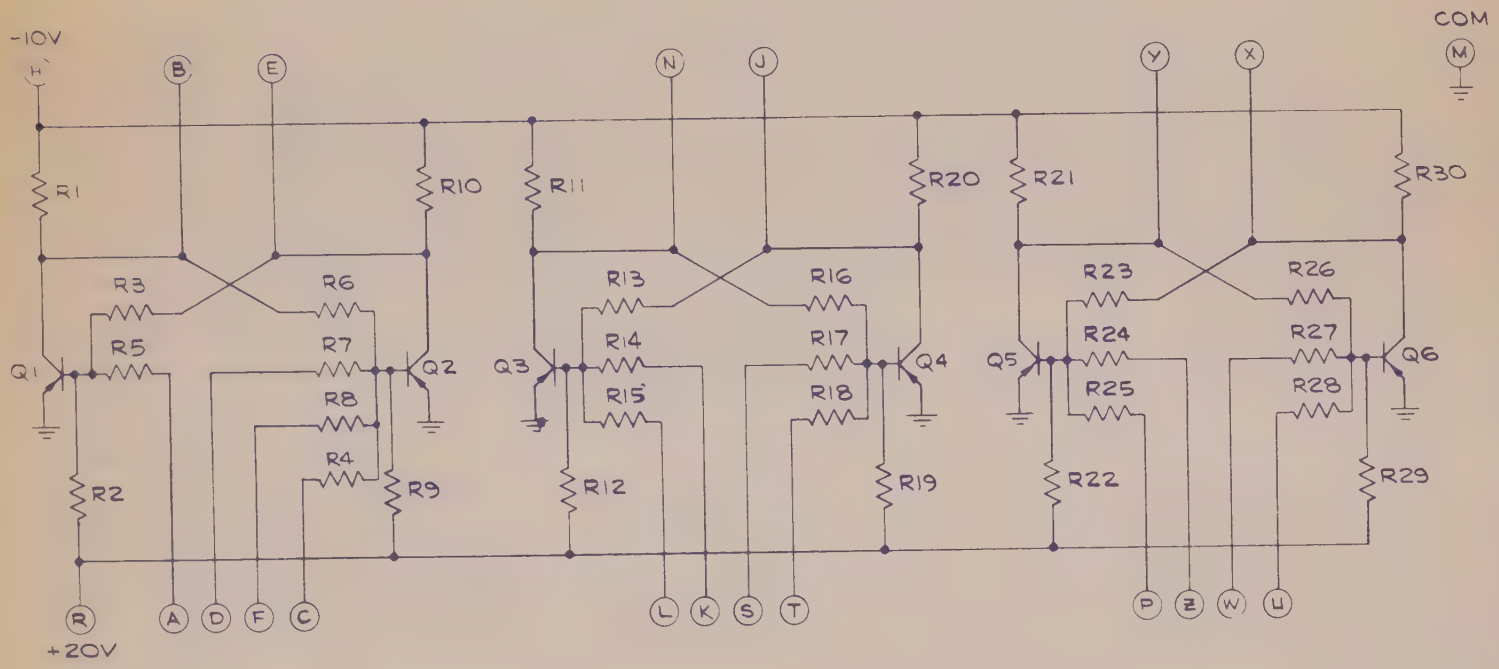
BX5137-34

REVISIONS				
ZONE	REV	DATE	SIG	DESCRIPTION



Q1 th: Q6	A
R1, R10, R1 . R30, R21. R30	K 1 W
R , R . R , R1 , R22, R2	K 1 W
R , R , R , R , R , R , R13, R1 , R . R16, R1 , R1 . R2 , R . R , R . R , R2	K 1 W

USED ON			TOLERANCES			BOONTON ELECTRONICS	PARSIPPANY NEW JERSEY
52-GA			2 PLACE DECIMAL .010 3 PLACE DECIMAL .005 UNLESS OTHERWISE SPECIFIED			COMP LOC FLIP FLOP II	
			SCALE				
			DRN	CAB	1-18-68		
			CKD		1-18-68		
			APP			SH OF BX5132-22-1	A



M166 ISSUE

No M168 CHANGE

TOLERANCES

FRACTION ± 1/64,
2 PLACE DECIMAL .010,
3 PLACE DECIMAL .005,
UNLESS OTHERWISE NOTED

SCALE

DRN		6-15-65
CKD		
APP		

FIRST USED ON:

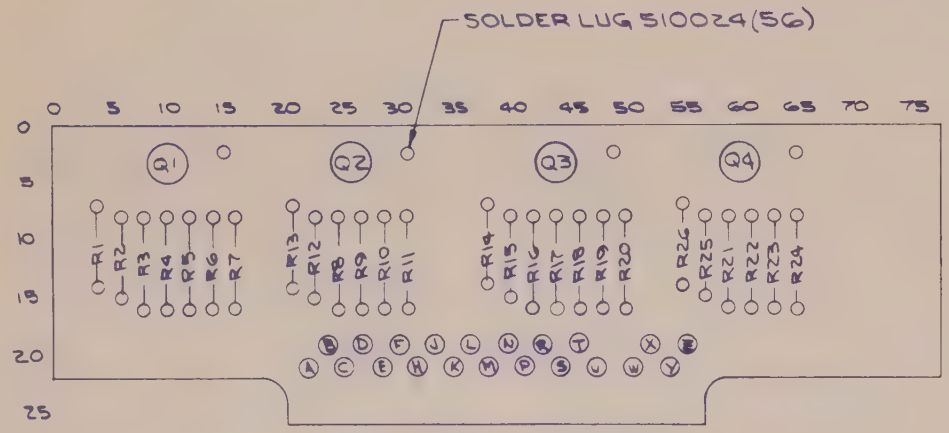
52-6A

BOONTON ELECTRONICS CORP.
MORRIS PLAINS, N. J.

SCHEMATIC FLIP-FLOP II

BX5132-23

REVISIONS				
ZONE	REV	DATE	SIG.	DESCRIPTION
	B		[illegible]	ADDED NOTE # 1



FRONT

Q1 THRU Q4	2N404A
R1,R13,R14,R26	3K 1/2W
R2,R12,R15,R25	220K 1/2W
R3,R4,R5,R6,R7, R8,R9,R10,R11, R1 ,R17,R18,R19, R20,R21,R22,R23, R24	30K 1/2W

NOTE:

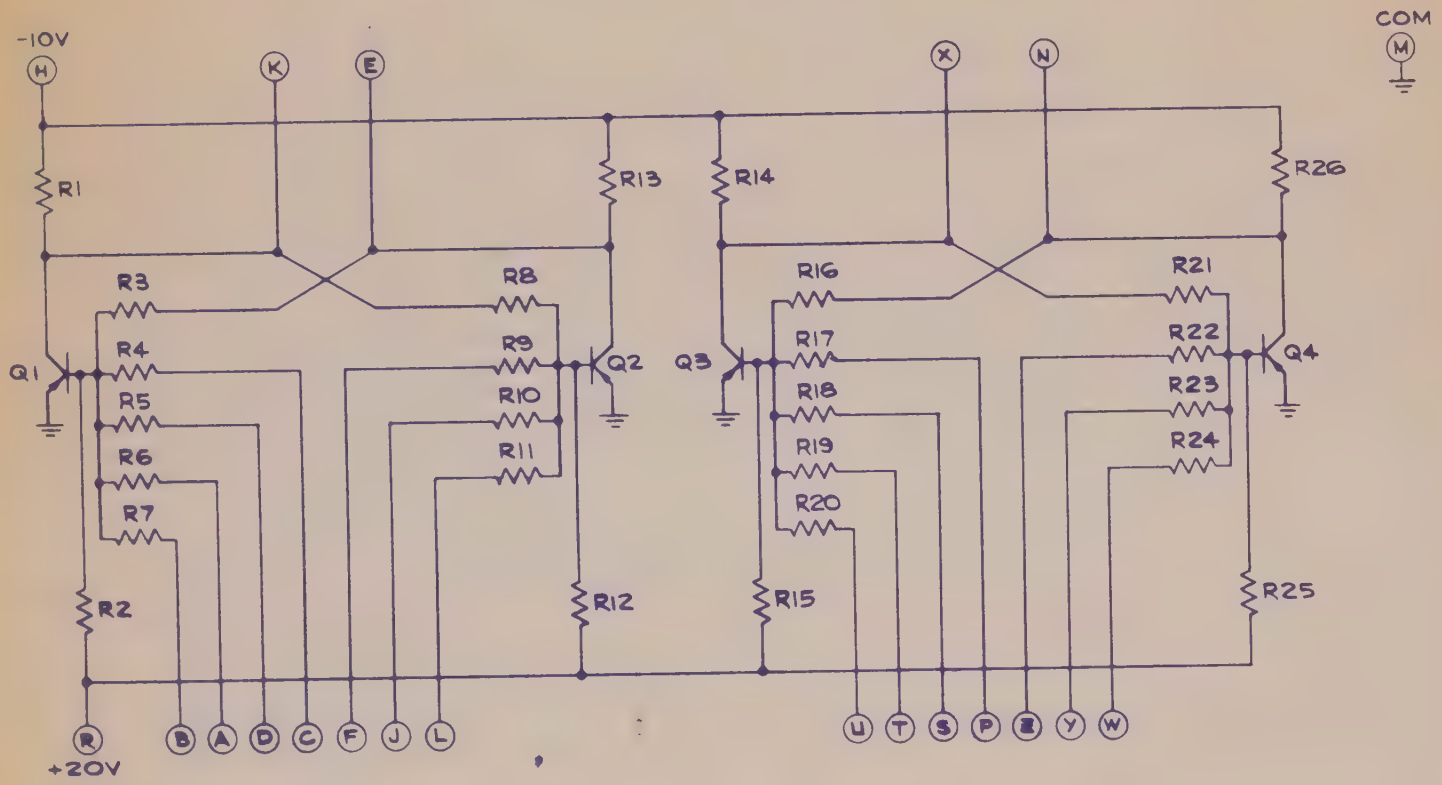
1. ALL COMPONENTS TO MOUNTED ON BOTTOM OF TERMINAL

USED ON	TOLERANCES		
52-6A	2 PLACE DECIMAL .010 3 PLACE DECIMAL .005 UNLESS OTHERWISE SPECIFIED		
	SCALE:		
	DRN [illegible]	9/18/68	
	CKD [illegible]	1-1-68	
	APP		

BOONTON ELECTRONICS CORPORATION PARSIPPANY NEW JERSEY

FLIP FLOP III

SH. OF BX5132-25-1 B



M766 ISSUE M 7 67

No. M 7 8 CHANGE

TOLERANCES:

FRACTION ± 1/64,
2 PLACE DECIMAL .010,
3 PLACE DECIMAL .005,
UNLESS OTHERWISE NOTED

SCALE:

DRN		6-16-65
CKD		
APP		

FIRST USED ON:

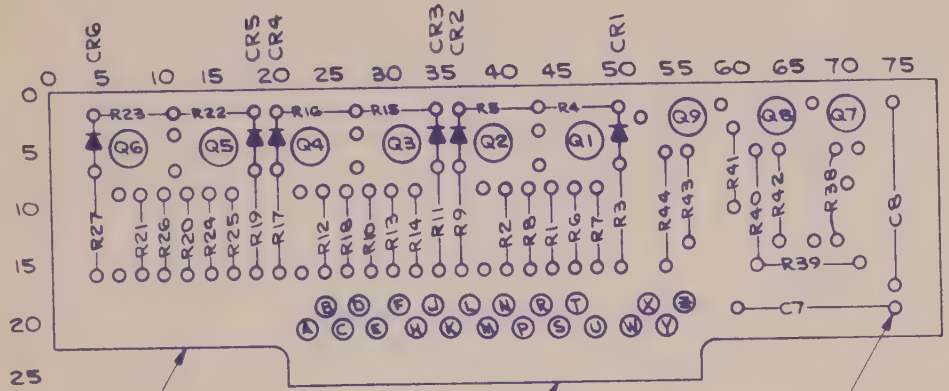
52-6A

BOONTON ELECTRONICS CORP.
MORRIS PLAINS, N. J.

SCHEMATIC FLIP-FLOP III

BX5132-26

REVISIONS				
ZONE	REV	DATE	SIG	DESCRIPTION



TERM. BD BX5135-43
TERM. BD. CX5135-43-1&2
FOR P/C

SOLDER LUG 510024(86)

C7, C8	.1 @
CR1 thru CR6	1N4 A
R1, R8, R10, R18, R20, R26, R41, R42	.1K 1 W
R2, R6, R7, R12, R13, R14, R21, R24, R25, R43	30K 1 2W
R3, R4, R5, R9, R11, R15, R16, R17, R19, R22, R23, R27, R40, R44	220K 1 2W
R38	100Ω 1 2W
R39	390Ω 1 2W
Q1 thru Q6, Q8, Q9	2N404A
Q7	2N1613

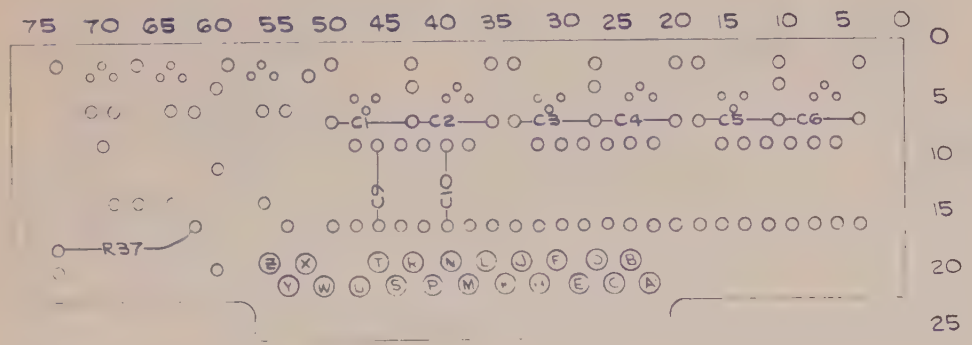
USED ON	TOLERANCES
122CD	2 PLACE DECIMAL .010 3 PLACE DECIMAL .005 UNLESS OTHERWISE SPECIFIED
	SCALE:
	DRN CAB 1-18-68
	CKD [illegible] 1-18-68
	APP

BOONTON ELECTRONICS PARSIPPANY NEW JERSEY

COMP LOC
CLOCK GEN II

SH. OF BX5136-27-1

REVISIONS				
ZONE	REV	DATE	SIG	DESCRIPTION
				M.08

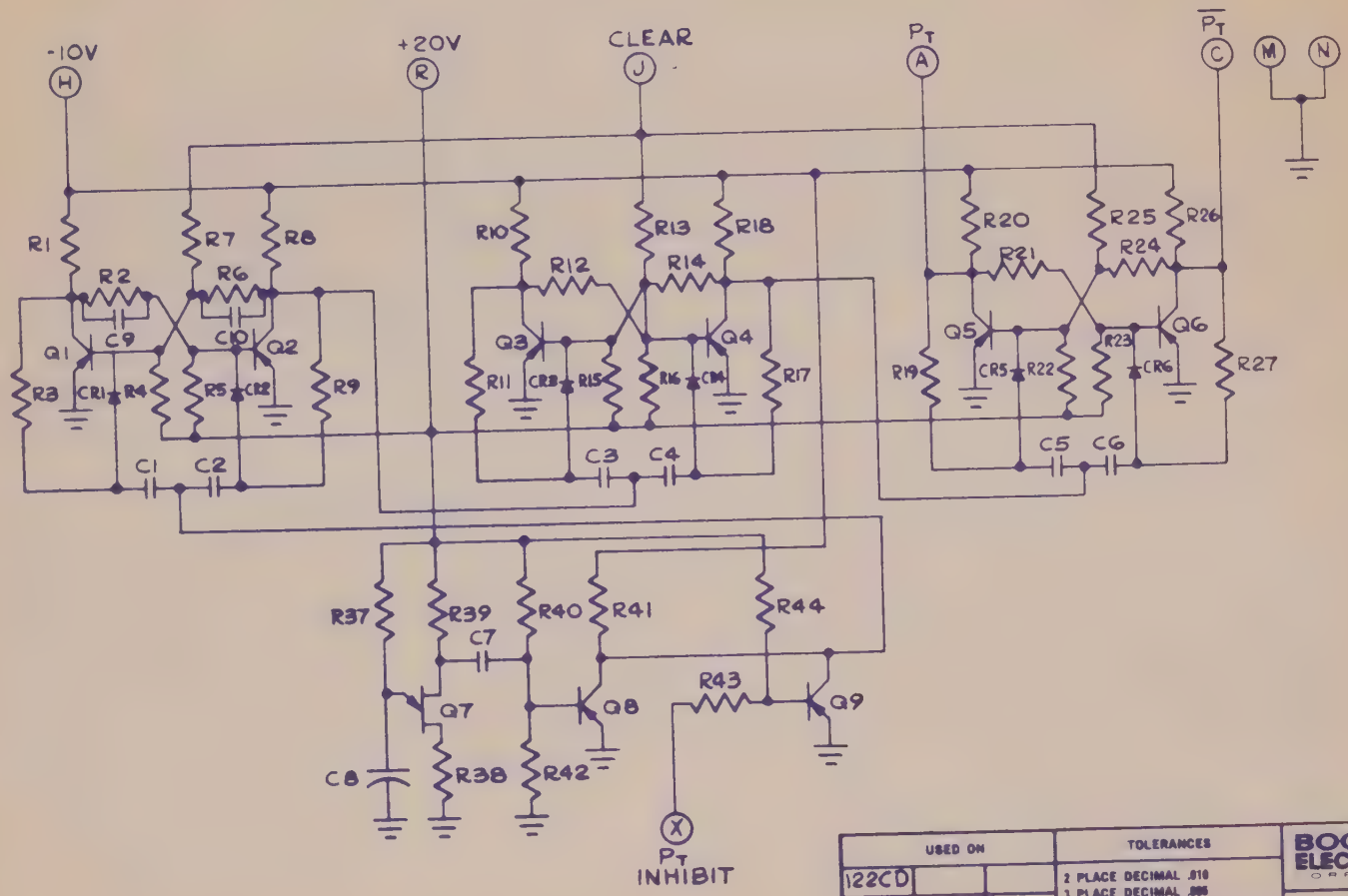


USED ON	TOLERANCES
	2 PLACE DECIMAL .010 PLACE DECIMAL .005 UNLESS OTHERWISE SPECIFIED
	SCALE
DRN 008	1-18-65
CKD	
APP	

BOONTON ELECTRONICS

COMP LOC (REAR)
CLOCK GEN II

SH BX5136-27-



REVISIONS				
ZONE	REV	DATE	SIG	DESCRIPTION

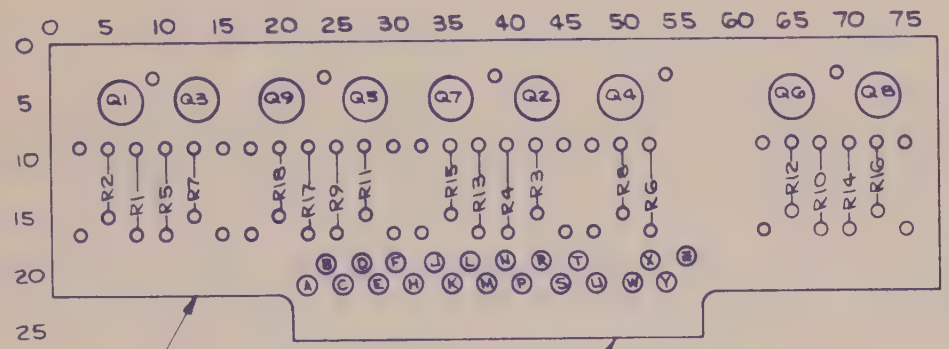
USED ON	TOLERANCES
122CD	2 PLACE DECIMAL .010 3 PLACE DECIMAL .005 UNLESS OTHERWISE SPECIFIED
	SCALE:
	DRN CAB 9-18-67
	CKD 9-19-67
	APP

BOONTON ELECTRONICS CORPORATION
PARSIPPANY NEW JERSEY

SCHEMATIC, CLOCK GEN II

SH. OF BX 5136-24

REVISIONS				
ZONE	REV.	DATE	SIG.	DESCRIPTION
				M 7 69



TERM BOARD BX5124-54
TERM BOARD CX5124-54-1&2
FOR P/C

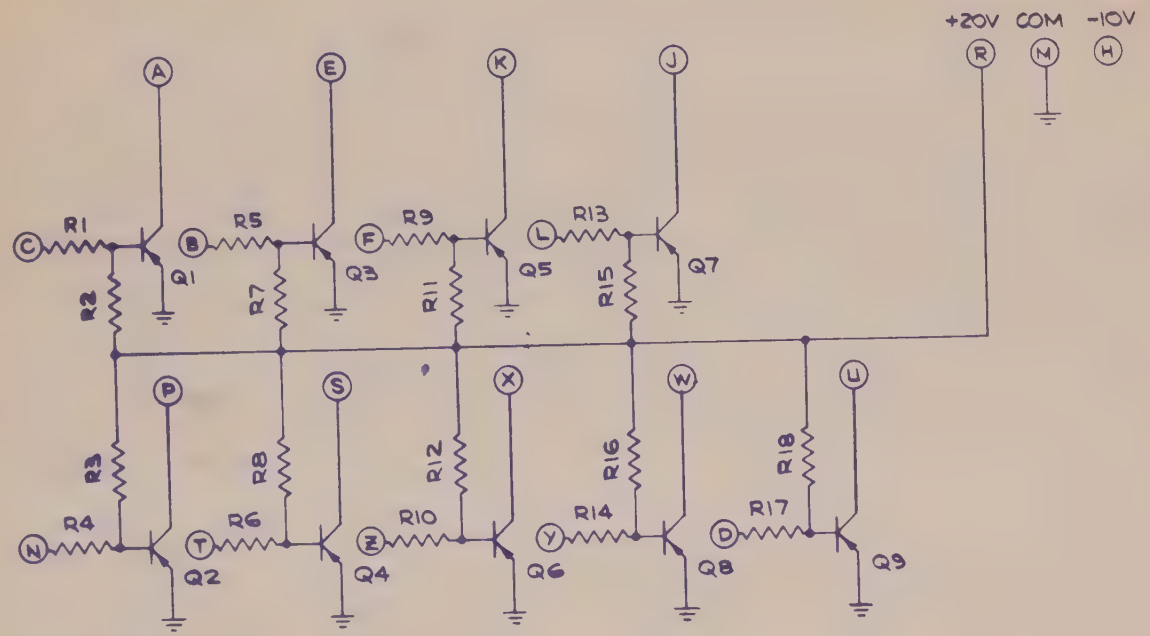
SELECTED	Q1 thru Q9	2N4[illegible]A
	R1, R4, R5, R6, R9, R10, R13, R1[illegible], R17	10K 1/2W
	R2, R3, R7, R8, R11, R12, R15, R16, R18	220K 1/2W

USED ON			TOLERANCES		
52-4B			2 PLACE DECIMAL .010 3 PLACE DECIMAL .005 UNLESS OTHERWISE SPECIFIED		
			SCALE:		
			DRN CAB	1-4-68	
			CKD	1-4-68	
			APP		

BOONTON ELECTRONICS CORPORATION
PARSIPPANY NEW JERSEY

COMP LOC
DRIVER II

SH OF BX5124-118-1



ISSUE M766

No.	CHANGE

TOLERANCES:

FRACTION ± 1/64.
2 PLACE DECIMAL .010,
3 PLACE DECIMAL .005,
UNLESS OTHERWISE NOTED

SCALE:

DRN		10-26-65
CKD		
APP		

FIRST USED ON:
52-4B

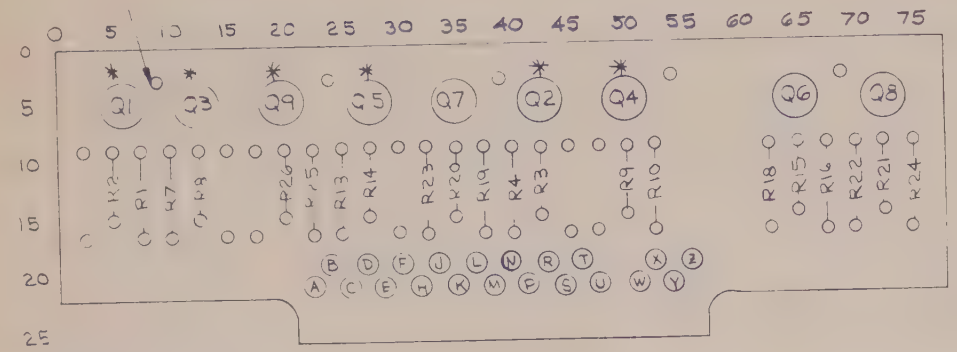
BOONTON ELECTRONICS CORP.
MORRIS PLAINS, N. J.

SCHEMATIC
DRIVER II
P/C BOARD

BX5124-117

REVISIONS M 08				
ZONE	REV	DATE	SIG	DESCRIPTION
	A	1/2/69	[illegible]	ADDED SEL RESISTORS

SOLDER LUG 510024(59)



Q1 thr.. Q9	2N404A
R2.R3.R8 R9.R14. R1 R20 R21 R26	220K 1 2W
R1 R7 R25 R10	10K 1 2W
R4 R16 R 22. R13	30K 1/2W
R1 ,R3,R24	3K 1 2W

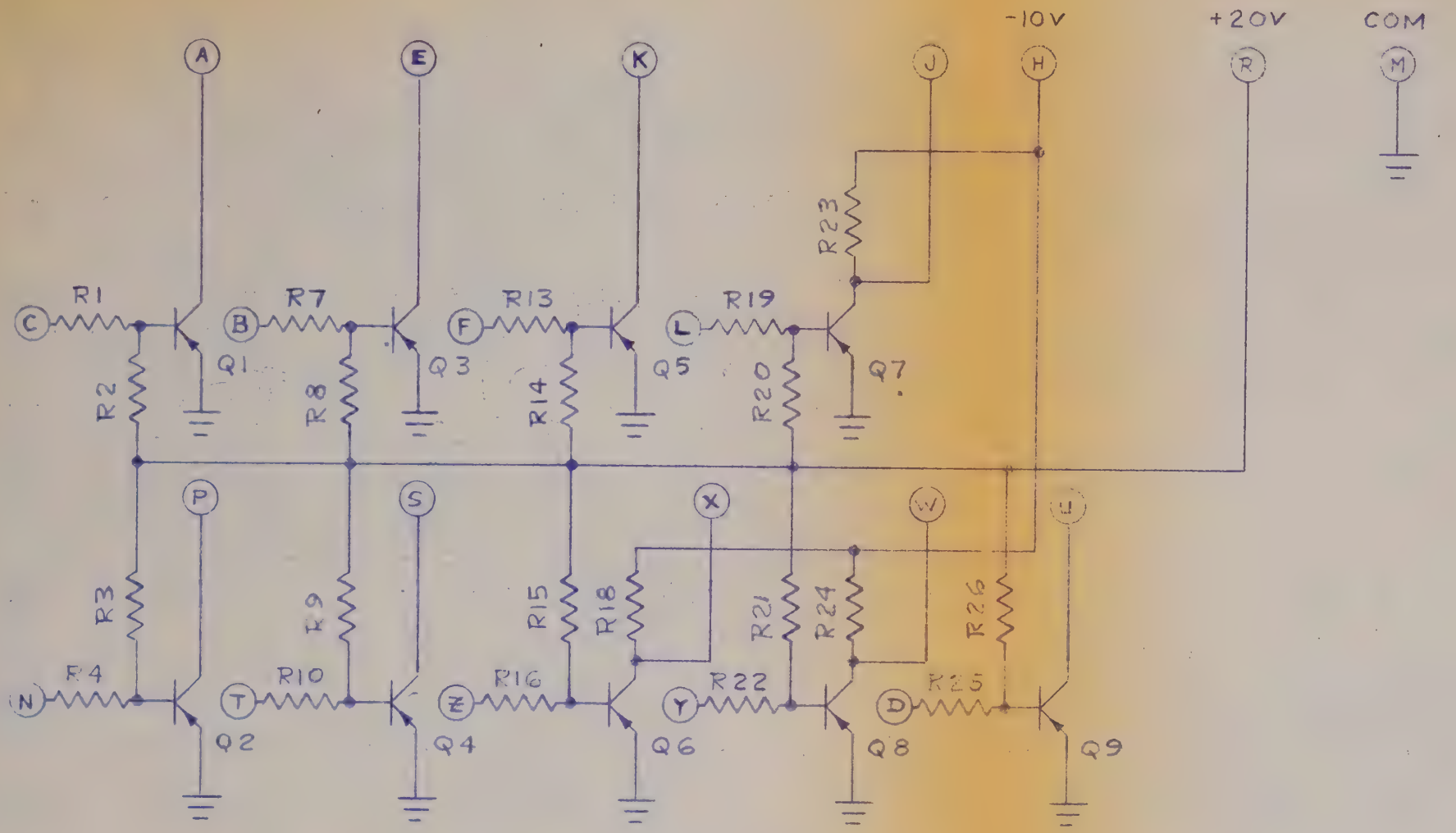
* SELECTED TRANSISTORS

USED ON	TOLERANCES
126CD	2 PLACE DECIMAL .010 3 PLACE DECIMAL .005 UNLESS OTHERWISE SPECIFIED
	SCALE
	DRN [illegible] 2-3-69
	CKD [illegible] 2-4-69
	APP

BOONTON ELECTRONICS
PARSIPPANY NEW JERSEY

COVER LOCATION
DRIVER-INVERTER
II

SH 1 OF 1
B-5137-31-
A



No.	CHANGE	ISSUE M 7 67

TOLERANCES:

FRACTION ± 1/64,
2 PLACE DECIMAL .010,
3 PLACE DECIMAL .005,
UNLESS OTHERWISE NOTED

SCALE: -H

DRN	ESM	12-17-65
CKD	JSW	12-17-65
APP		

FIRST USED ON:

126 CD

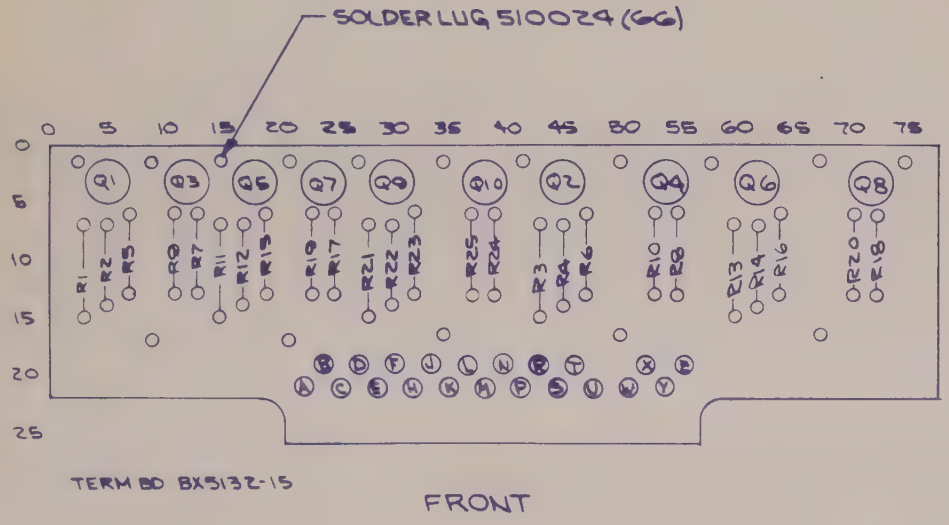
BOONTON ELECTRONICS CORP.
MORRIS PLAINS, N. J.

SCHEMATIC
DRIVER-INVERTER
II

BX5137-32

REVISIONS				
ZONE	REV	DATE	SIG.	DESCRIPTION
	B			ADDED NOTE #1

M 7. 69



Q1 THRU Q10	2N404
R5,R6,R15,R16, R23	5.1K 1/2W
R2,R4,R12,R14, R22	220K 1/2W
R1,R3,R11,R13, R21	30K 1/2W
R7,R8,R17,R18, R24	100K 1/2W
R9,R10,R19,R25, R20	3K 1/2W

NOTE:

1. ALL COMPONENTS TO BE MOUNTED ON BOTTOM OF TERMINAL.

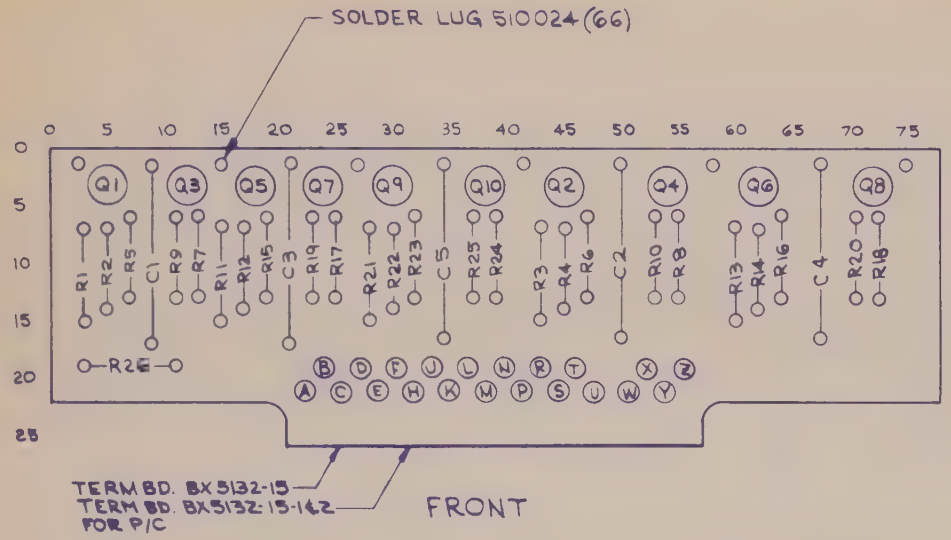
USED ON	TOLERANCES		
52-GA	2 PLACE DECIMAL .010 3 PLACE DECIMAL .005 UNLESS OTHERWISE SPECIFIED		
	SCALE:		
	DRN DGREEN	9/17/68	
	CKD	9.17.68	
	APP		

BOONTON ELECTRONICS CORPORATION PARSIPPANY NEW JERSEY

ONE SHOT MULTI-VIBRATOR (Wide)

SH OF BX5132-16-1 B

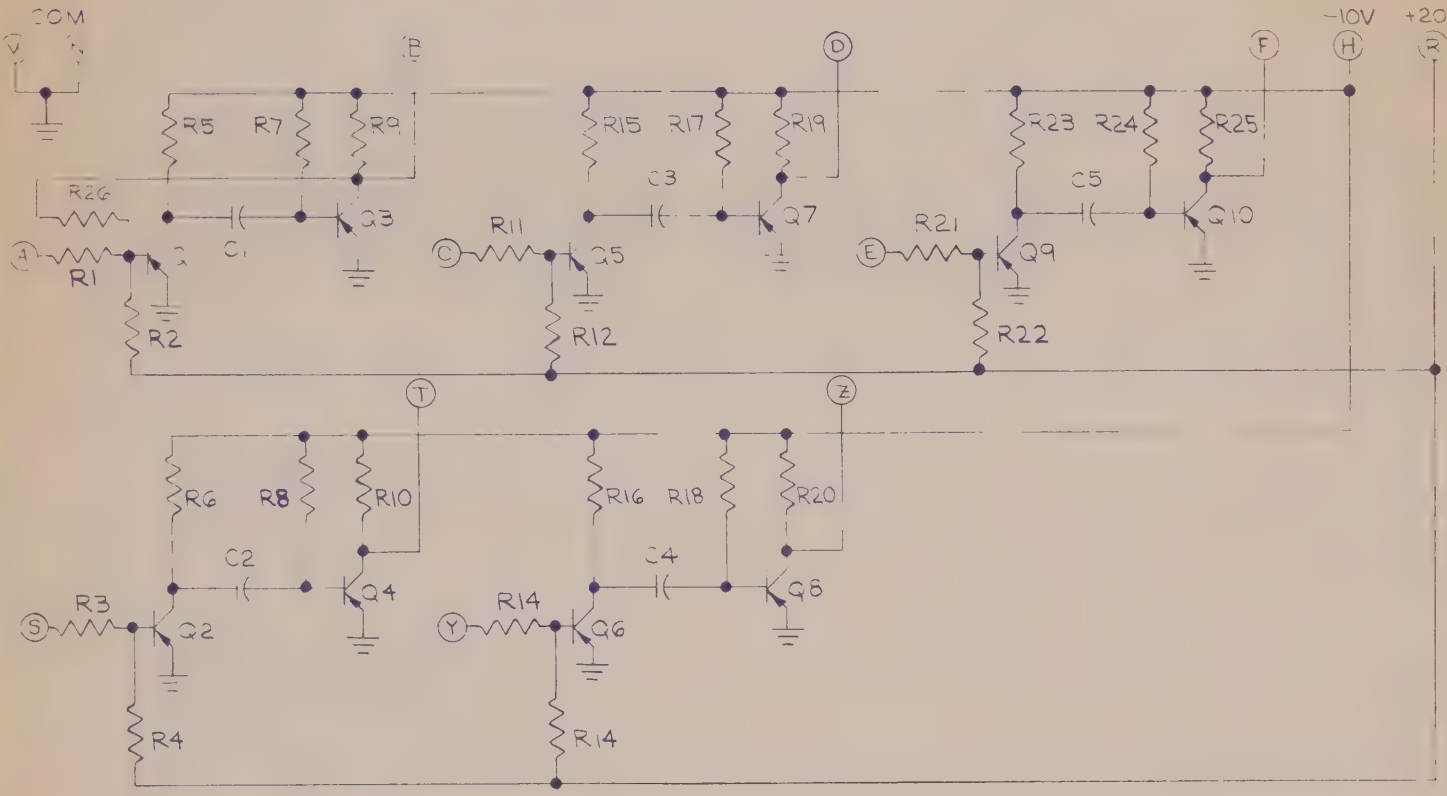
REVISIONS				
ZONE	REV.	DATE	SIG.	DESCRIPTION
				DELCO MODIFICATION



[illegible] C	2[illegible] 0 [illegible]
R[illegible],R[illegible],R[illegible],R[illegible], R[illegible]	[illegible]K 1/2W
R[illegible],R[illegible],R[illegible],R[illegible], R[illegible]	220K 1/2W
R1,R3,R11,R13, R21 R26	[illegible]K 1/2W
R7,R[illegible],R[illegible]7,R[illegible], P[illegible]	100K 1/2W
R[illegible],R[illegible]0,R[illegible],R25, R20	3K 1/2W
C5	Lot 1
C1,C2,C3,C4	.01uf @ 200V
R2[illegible]	30K 1/2W

NOTES:
1) C5 IS TO BE .01μF, 200V IN ALL UNITS EXCEPT 52-GA. IN 52-GA C5 IS .5μF 200V.
2) SEE 52-GA (BX5132-1G) FOR COMPLETE WIRING.

USED ON	TOLERANCES	BOONTON ELECTRONICS CORPORATION — PARSIPPANY NEW JERSEY
126CD-51	2 PLACE DECIMAL ±.010 3 PLACE DECIMAL ±.005 UNLESS OTHERWISE SPECIFIED	ONE SHOT II MULTI-VIBRATOR (d/le)
	SCALE:	
	DRN [illegible] 2-12-68	
	CKD [illegible] 2-12-68	
	APP	SH. OF BX5137-89-1&4 A



REVISIONS				
ZONE	REV	DATE	SIG	DESCRIPTION
				DELCO MODIFICATION

USED ON	TOLERANCES		
126CD-S1	2 PLACE DECIMAL .010 3 PLACE DECIMAL .005 UNLESS OTHERWISE SPECIFIED		
	SCALE		
	DRN	[illegible]	2-6-68
	CKD	[illegible]	2-12-68
	APP		

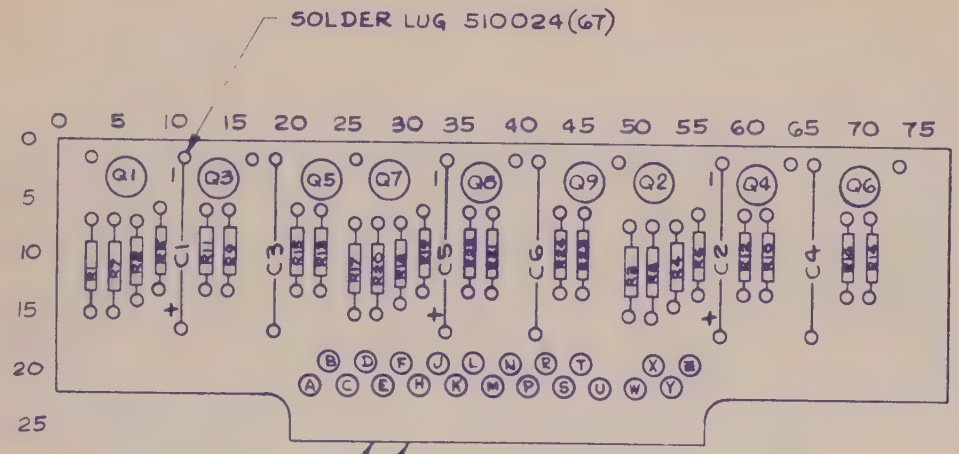
BOONTON ELECTRONICS — PARSIPPANY NEW JERSEY

SCHEMATIC
ONE-SHOT II
MULTI-VIBRATOR(1.1-)

SH OF

B 5137-58

REVISIONS M 788				
ZONE	REV.	DATE	SIG.	DESCRIPTION



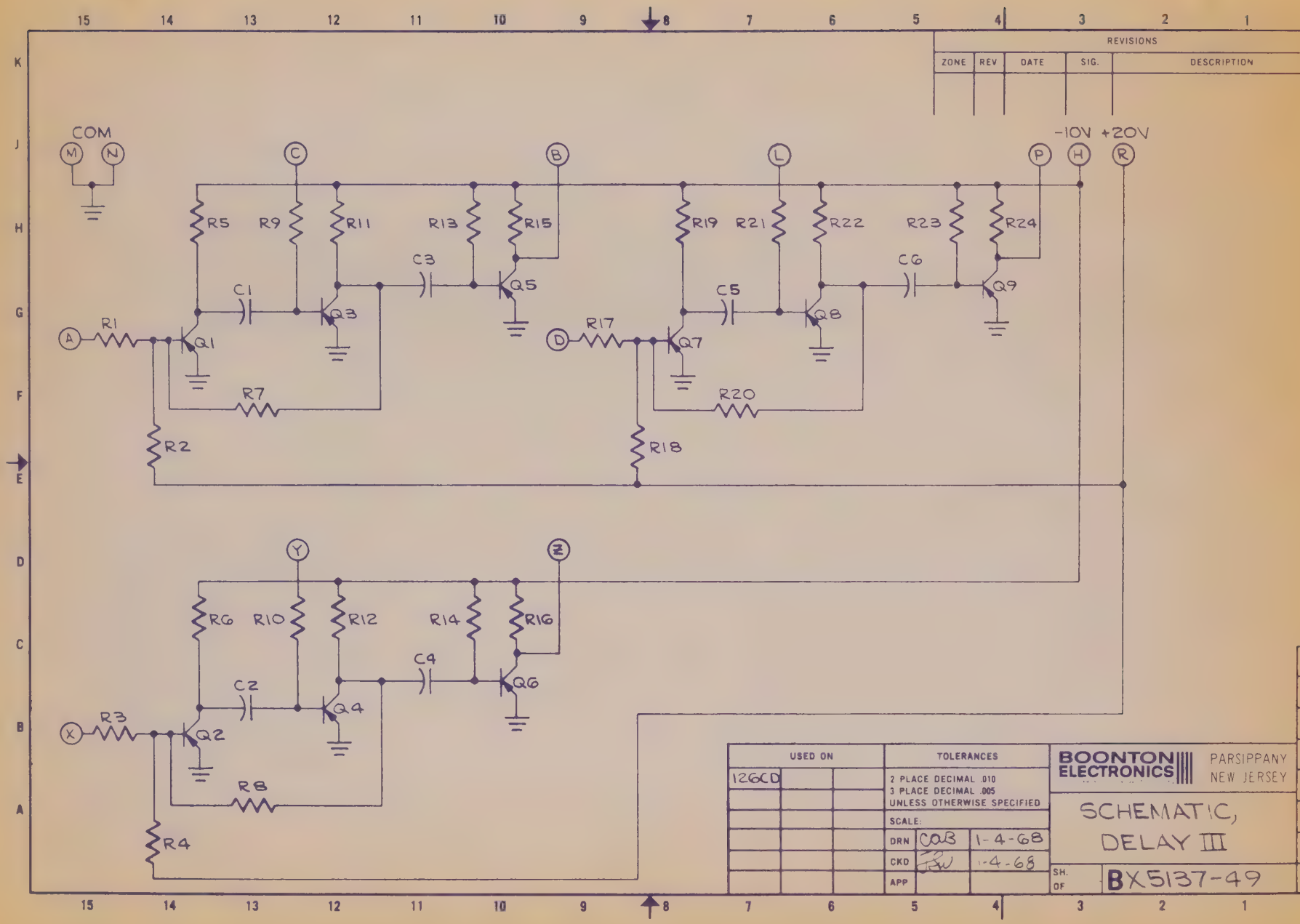
Q1 THRU Q9	2N404A
R2,R4,R18	220K-1/2W
R13,R14,R23	100K-1/2W
R1,R3,R7,R8 R17,R20	30K-1/2W
R5,R6,R11,R12 R15,R16,R19,R22 R24	5.1K-1/2W
R10	10K-1/2W
R9,R21	68K-1/2W
C1,C5	.5μF-200V
C2	2μF-15V/25V
C3,C6	.01μF-200V
C4	.1μF-200V

USED ON	TOLERANCES		
126CD	2 PLACE DECIMAL .010 3 PLACE DECIMAL .005 UNLESS OTHERWISE SPECIFIED		
	SCALE.		
	DRN CAB	9-20-67	
	CKD	9-20-67	
	APP		

BOONTON ELECTRONICS PARSIPPANY NEW JERSEY

DELAY III

SH OF BX5137-48-1 & 4 A



REVISIONS				
ZONE	REV	DATE	SIG.	DESCRIPTION

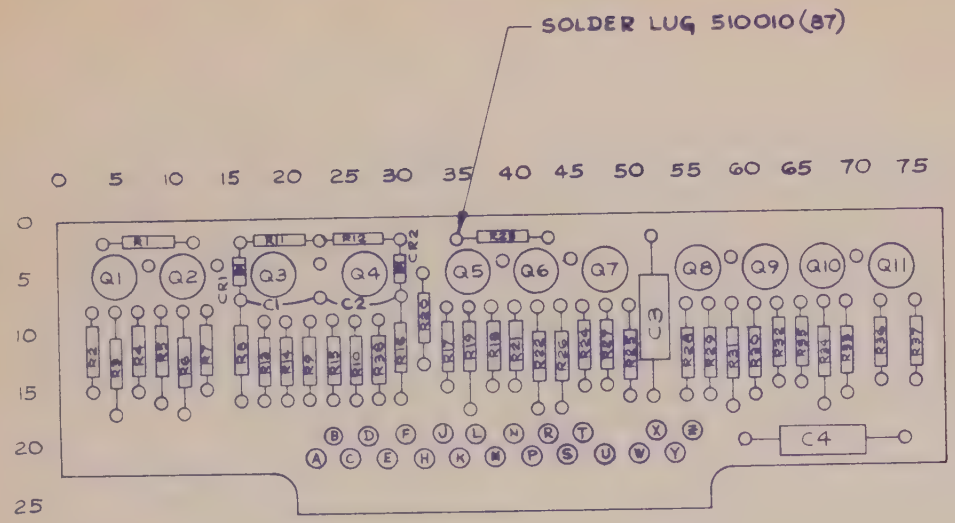
USED ON	TOLERANCES
126CD	2 PLACE DECIMAL .010 3 PLACE DECIMAL .005 UNLESS OTHERWISE SPECIFIED
	SCALE:
	DRN CAB 1-4-68
	CKD [illegible] 1-4-68
	APP

BOONTON ELECTRONICS PARSIPPANY NEW JERSEY

SCHEMATIC, DELAY III

SH. OF BX5137-49

REVISIONS				
ZONE	REV	DATE	SIG.	DESCRIPTION



TERM. BD BX5135-49

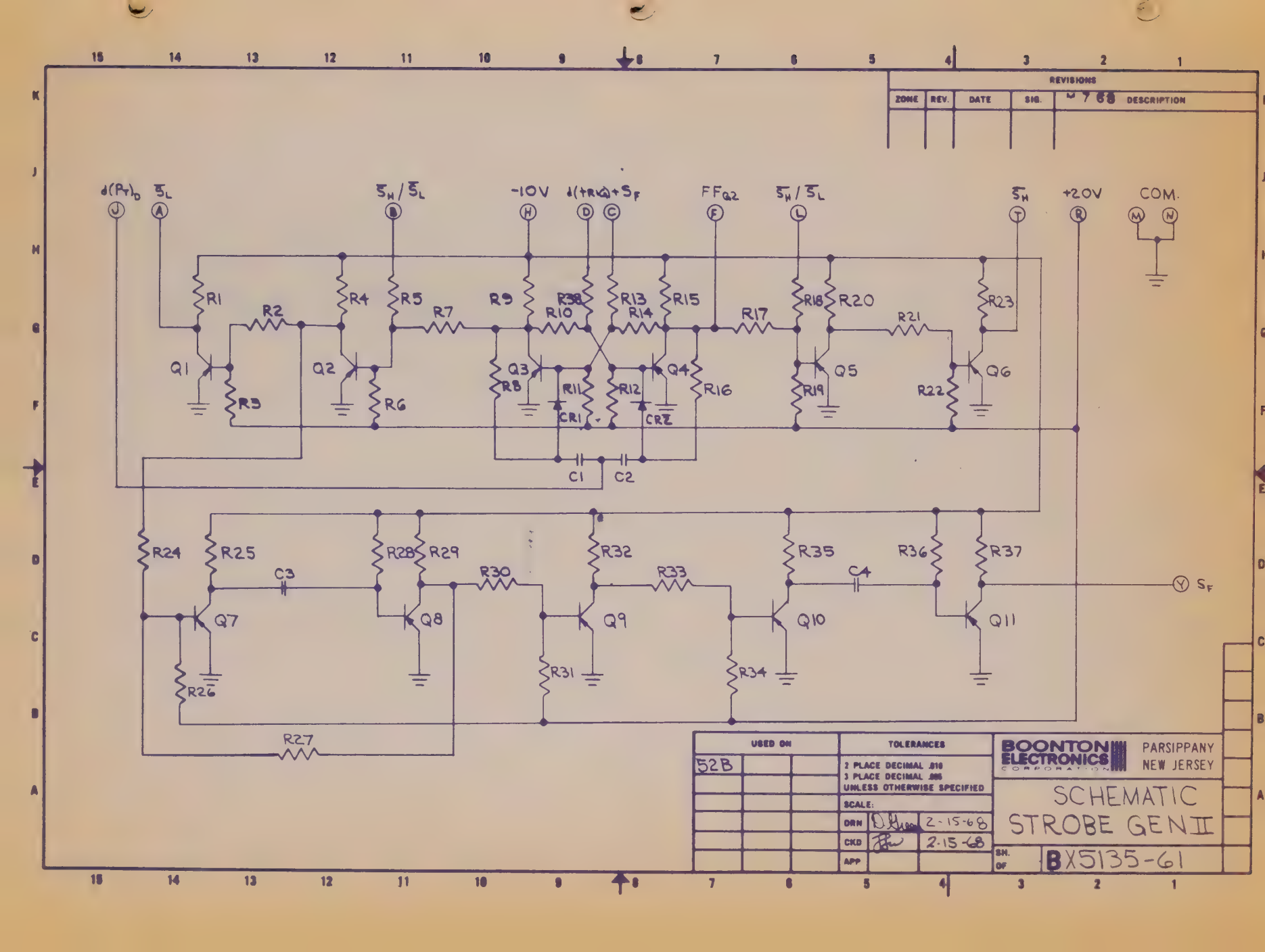
C3	.01μF-200V
C1, C2, C4	.001μF-200V
CR1, CR2	IN456A
R1, R4, R9, R15 R20, R23, R25, R29 R32, R35, R37	5.1K-1/2W
R3, R6, R8, R11 R12, R16, R19, R22 R26, R31, R34	220K-1/2W
R28, R36	120K, 1/2W
Q1 THRU Q11	2N404A
R2, R5, R7, R10 R13, R14, R17, R18 R21, R24, R27, R30 R33, R38	30K-1/2W

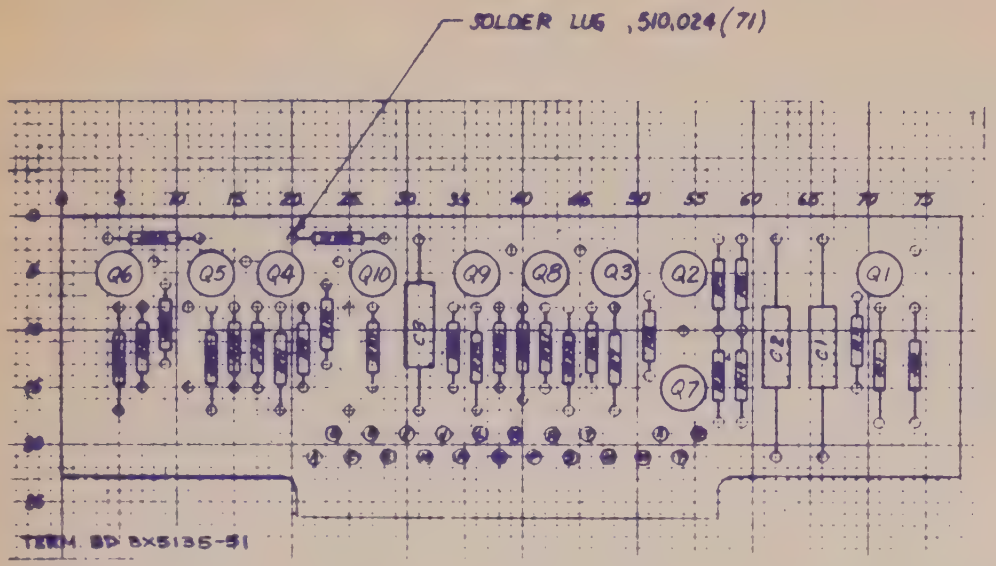
USED ON	TOLERANCES		
52B	2 PLACE DECIMAL ±.010 3 PLACE DECIMAL ±.005 UNLESS OTHERWISE SPECIFIED		
	SCALE:		
	DRN	COB	9-19-67
	CKD	[illegible]	9-19-67
	APP		

BOONTON ELECTRONICS CORPORATION
PARSIPPANY NEW JERSEY

STROBE GEN II CARD

SH. OF BX5135-50-1 A


REVISIONS
ZONE REV. DATE SIG. DESCRIPTION
d(PT)D
S̄L
S̄H / S̄L
-10V
d(TRIG)+SF
FFQ2
S̄H / S̄L
S̄H
+20V
COM.
R1 R2 R3 R4 R5 R6 R7 R8 R9 R10 R11 R12 R13 R14 R15 R16 R17 R18 R19 R20 R21 R22 R23
Q1 Q2 Q3 Q4 Q5 Q6
CR1 CR2
C1 C2
R24 R25 R26 R27 R28 R29 R30 R31 R32 R33 R34 R35 R36 R37
C3 C4
Q7 Q8 Q9 Q10 Q11
SF
USED ON
52B
TOLERANCES
2 PLACE DECIMAL .010
3 PLACE DECIMAL .005
UNLESS OTHERWISE SPECIFIED
SCALE:
DRN 2-15-68
CKD 2-15-68
APP
BOONTON ELECTRONICS CORPORATION
PARSIPPANY NEW JERSEY
SCHEMATIC
STRONE GEN II
SH. OF
BX5135-61



C1. C3	.001µf @ 200V
C2	.033µf @ 200V
R1. R6. R9. R10. R13. R16. R21. R24	30K 1/2W
R2. R7. R11. R14. R17. R22. R25	220K 1/2W
R3. R5. R8. R12. R15. R18. R20. R23. R26. R28	5 1K 1/2W
R4. R19. R27	120K 1/2W
Q1 thru Q10	2N404A

M765 ISSUE M766

NO M766 CHANGE M767

M768

TOLERANCES

FRACTION ± 1/64.
2 PLACE DECIMAL .010.
3 PLACE DECIMAL .005.
UNLESS OTHERWISE NOTED

SCALE FULL

DRN	Dm	2-8-65
CKD	JFO.	2-9-65
APP	[illegible]	2-9-65

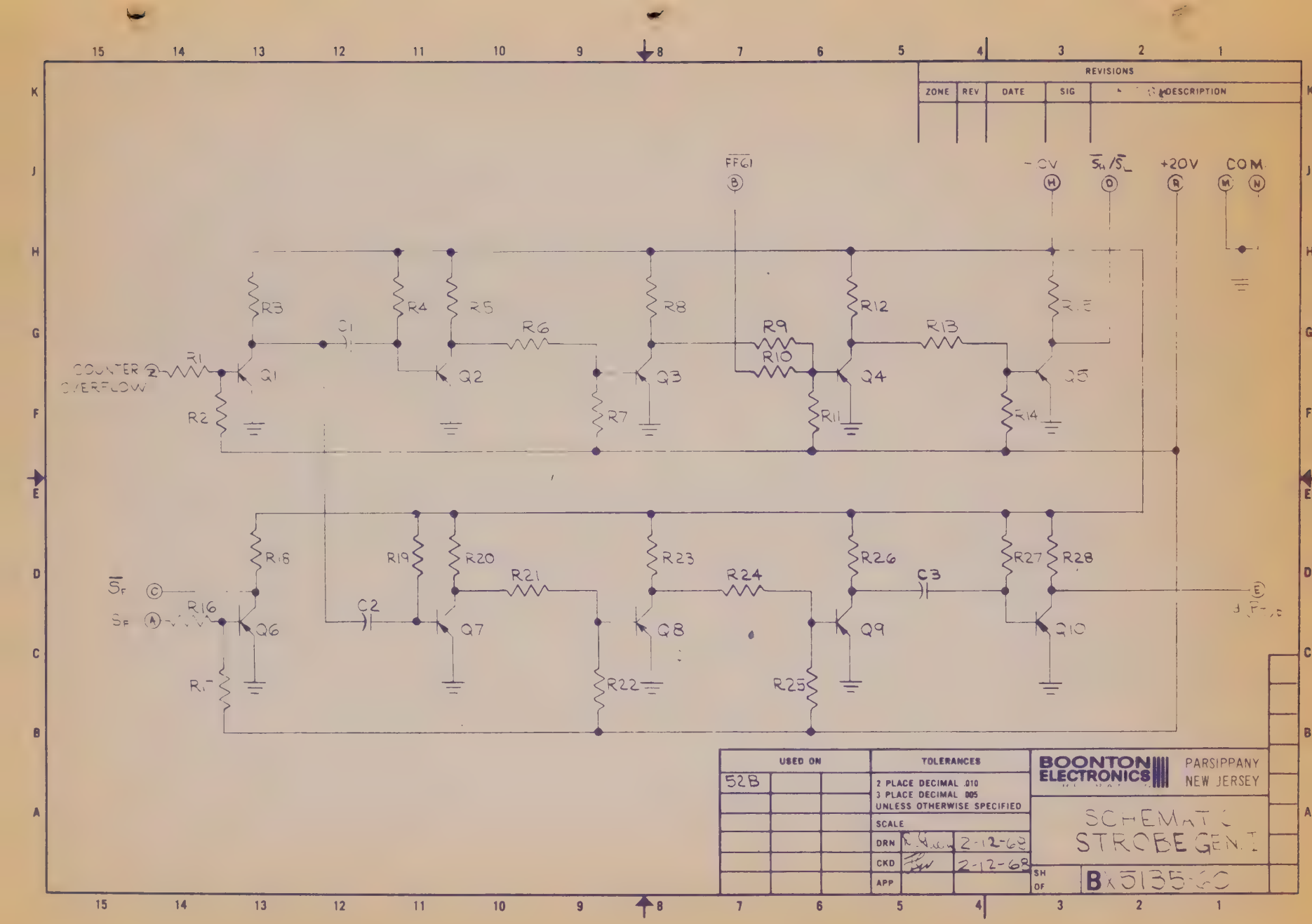
FIRST USED ON

52B

BOONTON ELECTRONICS CORP
MORRIS PLAINS, N J

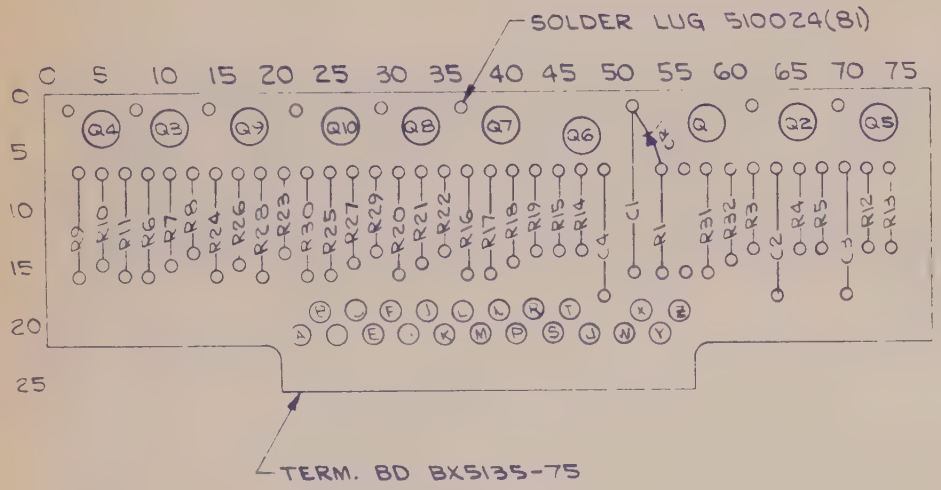
STROBE GEN. I
LOGIC CARD

BX5135-52-1


REVISIONS
ZONE
REV
DATE
SIG
DESCRIPTION
FFG1
B
-6V
H
S4/S5
D
+20V
R
COM
M
N
COUNTER OVERFLOW
Z
R1
R2
R3
C1
R4
R5
R6
R7
R8
R9
R10
R11
R12
R13
R14
R15
Q1
Q2
Q3
Q4
Q5
SF
C
SF
A
R16
R17
R18
R19
R20
R21
R22
R23
R24
R25
R26
C2
C3
R27
R28
Q6
Q7
Q8
Q9
Q10
E
USED ON
52B
TOLERANCES
2 PLACE DECIMAL .010
3 PLACE DECIMAL .005
UNLESS OTHERWISE SPECIFIED
SCALE
DRN
CKD
APP
2-12-68
2-12-68
BOONTON ELECTRONICS
PARSIPPANY NEW JERSEY
SCHEMATIC
STROBE GEN. I
SH
OF
B 5135-CC

M768

REVISIONS				
ZONE	REV	DATE	SIG	DESCRIPTION



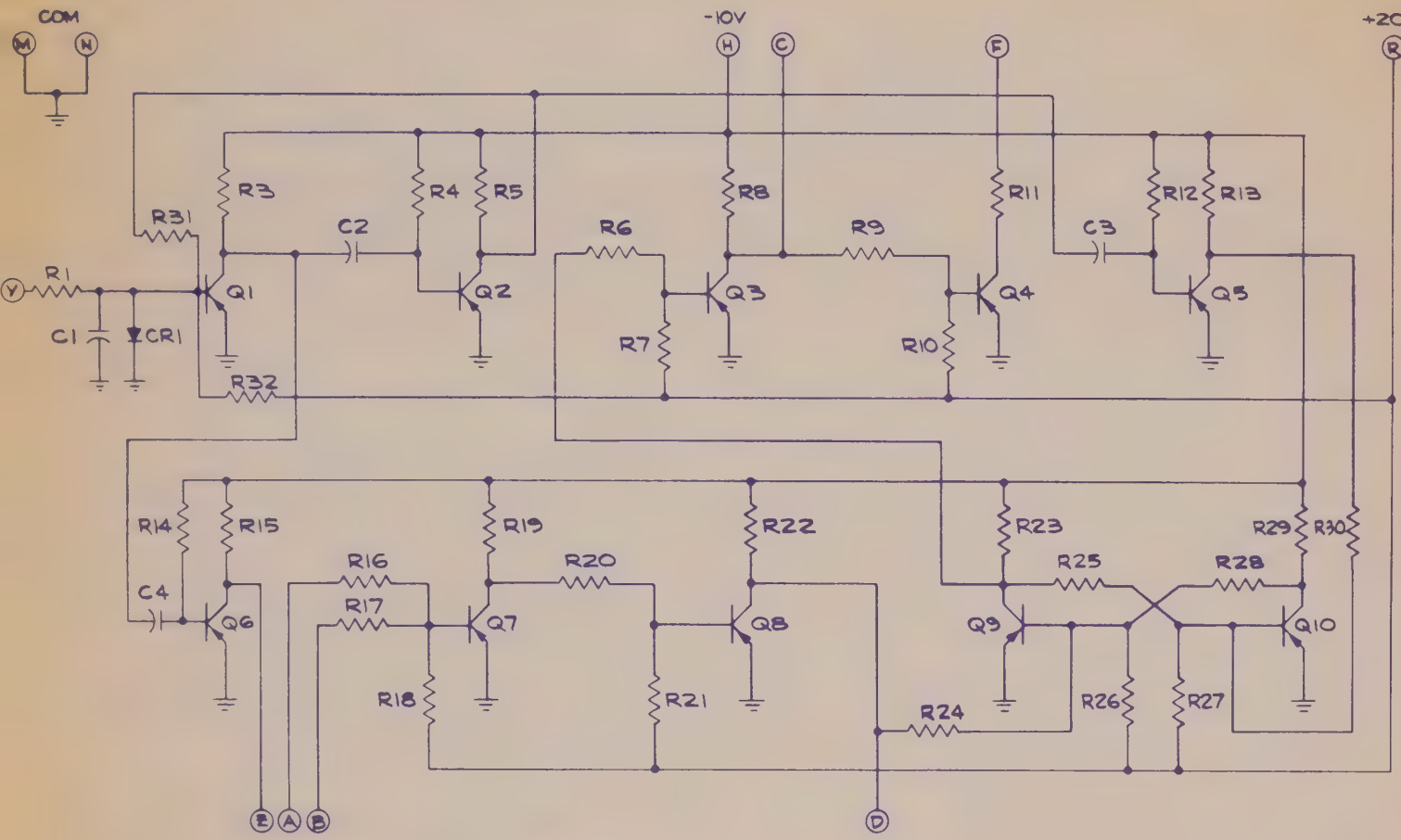
Q1 thru Q10	2N404A
C1	0.1 uf 200V
C2	0.022 uf 200V
C3	0.001 uf 200V
C4	0.01 uf 200V
CR1	1N456A
R1	56K 1/2W
R3,R5,R8,R13,R15, R19,R22,R23,R29	5.1K 1/2W
R4,R12,R14	120K 1/2W
R6,R9,R16,R17,R20, R24,R25,R28,R30,R31	30K 1/2W
R7,R10,R18.R21,R26, R27,R32	220K 1/2W
R11	270 Ohms 1/2W

USED ON	TOLERANCES		
528	2 PLACE DECIMAL .010 3 PLACE DECIMAL .005 UNLESS OTHERWISE SPECIFIED		
	SCALE		
	DRN	CAB	11-14-67
	CKD		11-16-67
	APP		

BOONTON ELECTRONICS — FAIRFIELD, NEW JERSEY

TRIGGER LOGIC II, COMP LOC

SH 1 OF 1 — B-5135-76-1



M/66 ISSUE M 7 67

No.	CHANGE
	M 7 68

TOLERANCES:

FRACTION ± 1/64,
2 PLACE DECIMAL .010,
3 PLACE DECIMAL .005,
UNLESS OTHERWISE NOTED

SCALE:

DRN	JSW	10-2-65
CKD		
APP		

FIRST USED ON:

52B

BOONTON ELECTRONICS CORP.
MORRIS PLAINS, N. J.

SCHEMATIC TRIGGER LOGIC II

BX5135-77

TABLE I

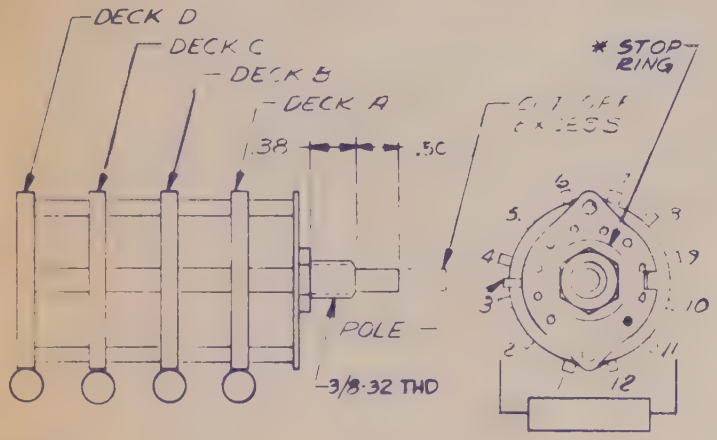
DECADE	REF. NO.	R1	R2	R3	R4	DESCRIPTION
1		1Ω	2Ω	4Ω	4Ω	1Ω PER STEP DECADE
2		10Ω	20Ω	40Ω	40Ω	10Ω " " "
3		100Ω	200Ω	400Ω	400Ω	100Ω " " "
4		1K	2K	4K	4K	1K " " "
5		10K	20K	40K	40K	10K " " "
6		100K	200K	400K	400K	100K " " "
7		.1Ω	.2Ω	.4Ω	.4Ω	.1Ω " " "
8		4Ω	8Ω	16Ω	16Ω	±.01% PER STEP TOL. DECADE
9		40Ω	80Ω	160Ω	160Ω	±.1% " " " "
10		400Ω	800Ω	1.6K	1.6K	±1% " " " "

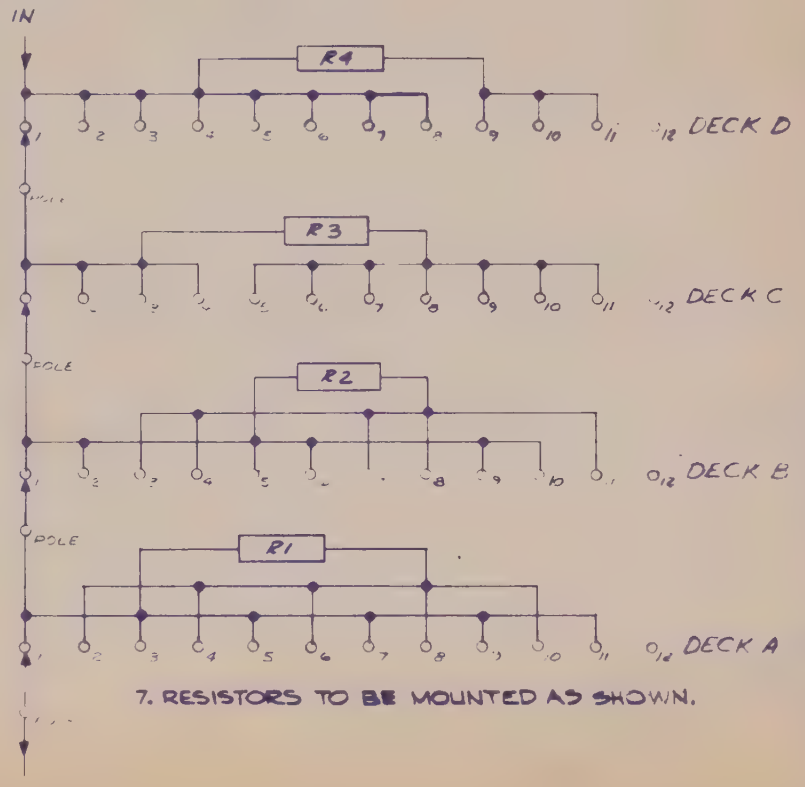
INTER-DECK JUMPERS

FROM	TO
(IN)	D-1
D-POLE	C-1
C-POLE	B-1
B-POLE	A-1
(OUT)	A-POLE

JUMPERS

DECK	GROUP 1	GROUP 2
A	1, 3, 5, 7, 9, 11	2, 4, 6, 8, 10
B	1, 2, 5, 6, 9, 10	3, 4, 7, 8, 11
C	1, 2, 3, 4	5, 6, 7, 8, 9, 10, 11
D	1, 2, 3, 4, 5, 6, 7, 8	9, 10, 11





NOTES:

1. REFER TO RESISTOR CHART BX5100-52 FOR TOL. & WATTAGE OF RESISTORS.
2. SWITCH TYPE MALLORY 4M2141 2C
   BEC PART NUMBER 466184
3. *STOP RING POSITION INDICATED BY SOLID DOT.
4. SWITCH TO BE FULLY COUNTER CLOCKWISE BEFORE STOP RING IS INSTALLED.
5. ALL JUMPERS #22 AWG SOLID-TINNED WIRE.
6. ALL SLEEVING #22 AWG TEFLON.
7. RESISTORS TO BE MOUNTED AS SHOWN.

M766 ISSUE M 7 67

No.	CHANGE
B	M 768 ADDED -7.

TOLERANCES:
FRACTION ± 1/64,
2 PLACE DECIMAL .010,
3 PLACE DECIMAL .005,
UNLESS OTHERWISE NOTED

SCALE: ~

DRN	RW	12-13-65
CKD		12.14.65
APP	R.H.C.	12-14-65

FIRST USED ON:
122 CD

BOONTON ELECTRONICS CORP.
MORRIS PLAINS, N. J.

SCHEMATIC
NOM / ± TOL. (1%)
DECADE SW.

B

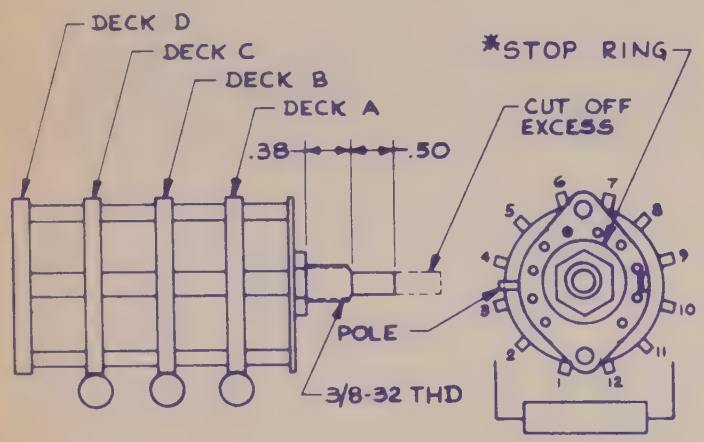
B X5136-29

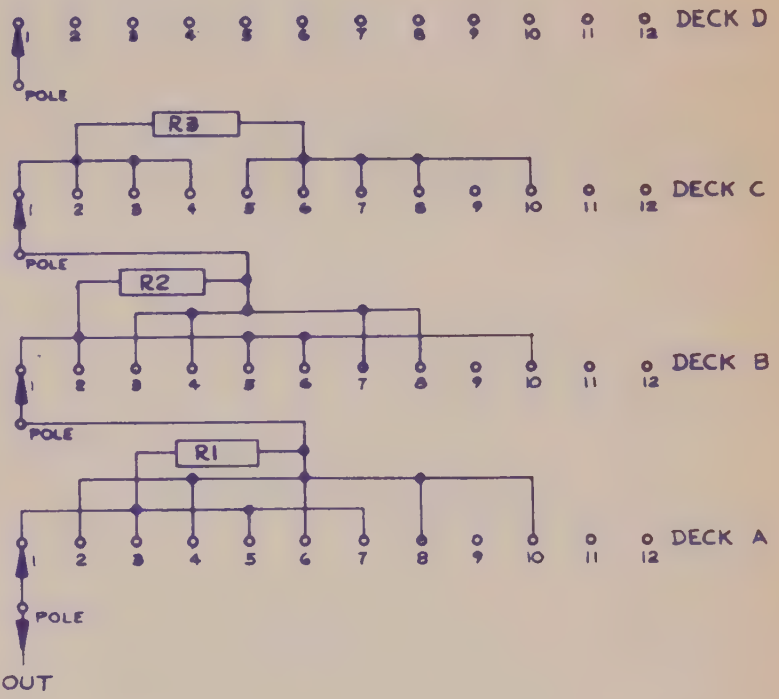
TABLE I							INTER-DECK JUMPERS		JUMPERS		
DASH NO.	REV NO.	R1	R2	R3	R4	DESCRIPTION	FROM	TO	DECK	GROUP 1	GROUP 2
-1		4K	8K	16K	—	-0 TO 50% TOL SW	(IN)	C-G	A	1,3,5	2,4,6
-2							C-POLE	B-4	B	1,2,5,6	3,4
-3							B-POLE	A-6	C	1,2,3,4	5,6
-4							(OUT)	A-POLE	D	NOT USED	NOT USED

REVISIONS M 768

ZONE	REV.	DATE	SIG.	DESCRIPTION
	B	2/16/69	Dick	ADDED JUMPERS

7 [illegible]





NOTES:

1. REFER TO RESISTOR CHART BX5100-52 FOR TOL. & WATTAGE OF RESISTORS.
2. SWITCH TYPE MALLORY 4M21412C BEC PART NUMBER 466184.
3. *STOP RING POSITION INDICATED BY SOLID DOT.
4. SWITCH TO BE FULLY COUNTER CLOCK-WISE BEFORE STOP RING IS INSTALLED.
5. ALL JUMPERS #22 AWG SOLID-TINNED WIRE.
6. ALL SLEEVING #22 AWG TEFLON.
7. RESISTORS TO BE MOUNTED AS SHOWN.

USED ON			TOLERANCES			
122CD			2 PLACE DECIMAL ±.010 3 PLACE DECIMAL ±.005 UNLESS OTHERWISE SPECIFIED			
			SCALE:			
			DRN	CAB	9-21-67	
			CKD	[signature]	9-21-67	
			APP			

BOONTON ELECTRONICS CORPORATION PARSIPPANY NEW JERSEY

SCHEMATIC

TOL(0-50%) DECADE

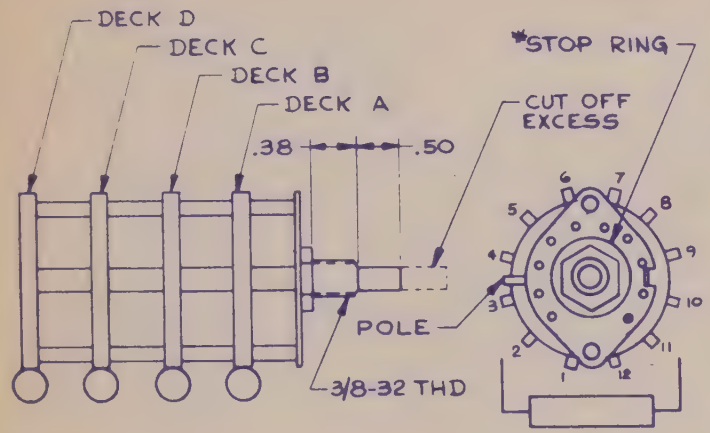
SH. OF BX5136-32

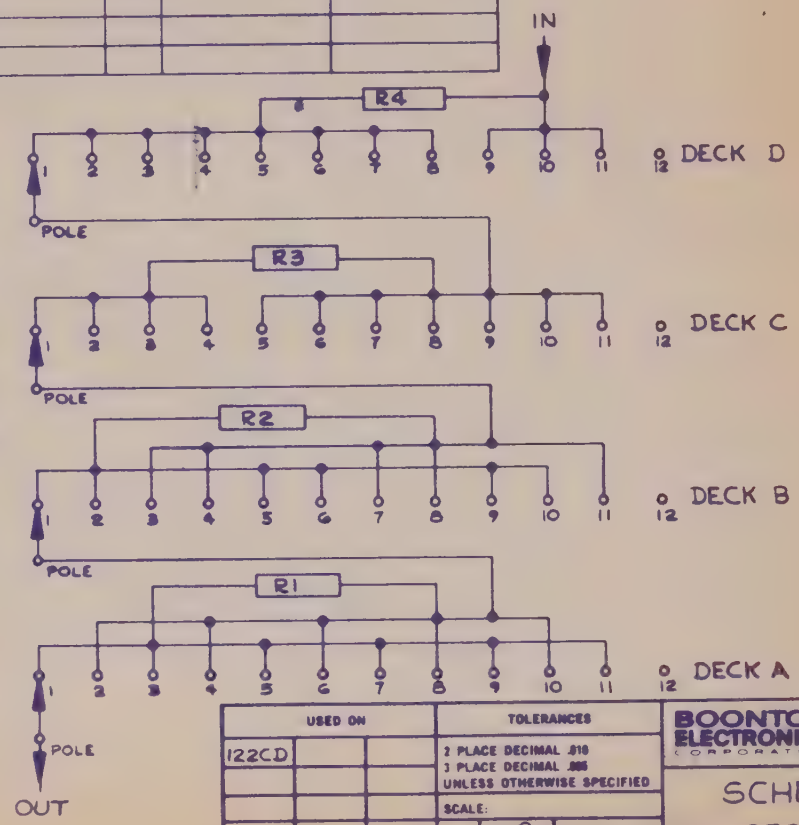
B

DASH NO.	REF NO.	R1	R2	R3	R4	DESCRIPTION
-1						
-2						
-3						
-4						
-5						
-6						
-7						
-8		4Ω	8Ω	16Ω	16Ω	.01% PER STEP TOL DECADE
-9		40Ω	80Ω	160Ω	160Ω	.1% PER STEP TOL DECADE
-10		400Ω	800Ω	1.6K	1.6K	1% PER STEP TOL DECADE

INTER-DECK JUMPER FROM	INTER-DECK JUMPER TO	JUMPERS DECK	JUMPERS GROUP 1	JUMPERS GROUP 2
(IN)	D 8	A	1,3,5,7,9,11	2,4,6,8,10
D-POLE	C 8	B	1,2,5,6,9,10	3,4,7,8,11
C-POLE	B 8	C	1,2,3,4	5,6,7,8,9,10,11
B-POLE	A 8	D	1,2,3,4,5,6,7,8	9,10,11
(OUT)	A-POLE			

REVISIONS ZONE	REV.	DATE	SIG.	DESCRIPTION





NOTES:

1. REFER TO RESISTOR CHART BX5100-52 FOR TOL. & WATTAGE OF RESISTORS.
2. SWITCH TYPE MALLORY 4M21412C BEC PART NUMBER 466184.
3. *STOP RING POSITION INDICATED BY SOLID DOT.
4. SWITCH TO BE FULLY COUNTER CLOCK-WISE BEFORE STOP RING IS INSTALLED.
5. ALL JUMPERS #22 AWG SOLID-TINNED WIRE.
6. ALL SLEEVING #22 AWG TEFLON.
7. RESISTORS TO BE MOUNTED AS SHOWN.

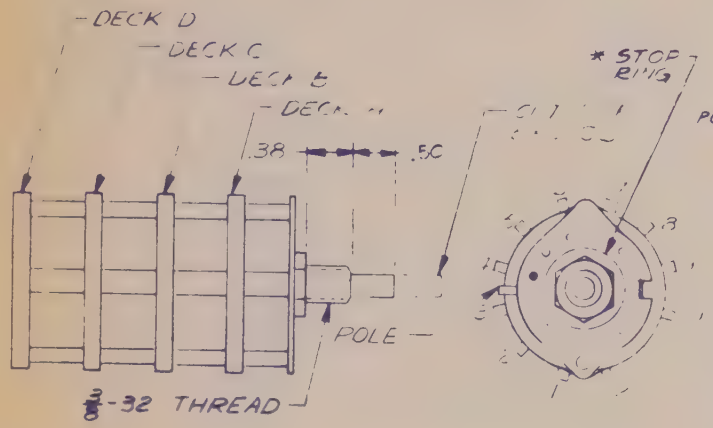
USED ON	TOLERANCES		
122CD	2 PLACE DECIMAL .010 3 PLACE DECIMAL .005 UNLESS OTHERWISE SPECIFIED		
	SCALE:		
	DRN	COB	9-21-67
	CKD		9-21-67
	APP		

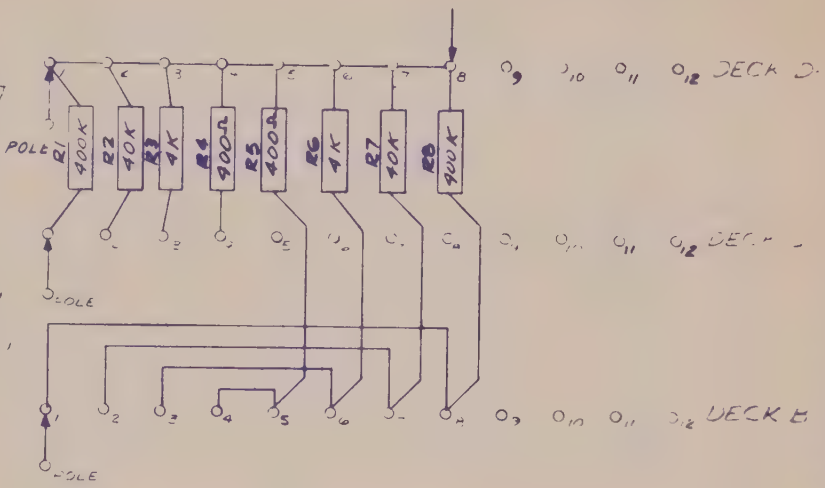
BOONTON ELECTRONICS CORPORATION PARSIPPANY NEW JERSEY

SCHEMATIC,
-TOL DECADE 1%/STEP

SH. OF BX 5136-33 A

TABLE I							INTER-DECK JUMPERS		JUMPERS		
...3H	REF.	R1	R2	R3	R4	DESCRIPTION	FROM	TO	DECK	GROUP 1	GROUP 2
									A		
									B		
									C		
									D		





NOTES:

1. REFER TO RESISTOR CHART BX5100-52 FOR TOL. & WATTAGE OF RESISTORS.
2. SWITCH TYPE MALLORY 4M21412C BEC PART NUMBER 466184
3. *STOP RING POSITION INDICATED BY SOLID DOT.
4. SWITCH TO BE FULLY COUNTER CLOCKWISE BEFORE STOP RING IS INSTALLED.
5. ALL JUMPERS #18 AWG SOLID-TINNED WIRE.
6. ALL SLEEVING #18 AWG TEFLON.

M766 ISSUE M 7 67

No	CHANGE

TOLERANCES:
FRACTION ± 1/64,
2 PLACE DECIMAL .010,
3 PLACE DECIMAL .005,
UNLESS OTHERWISE NOTED

SCALE ~

DRN	RW	12-13-65
CKD		12-13-65
APP		12-14-65

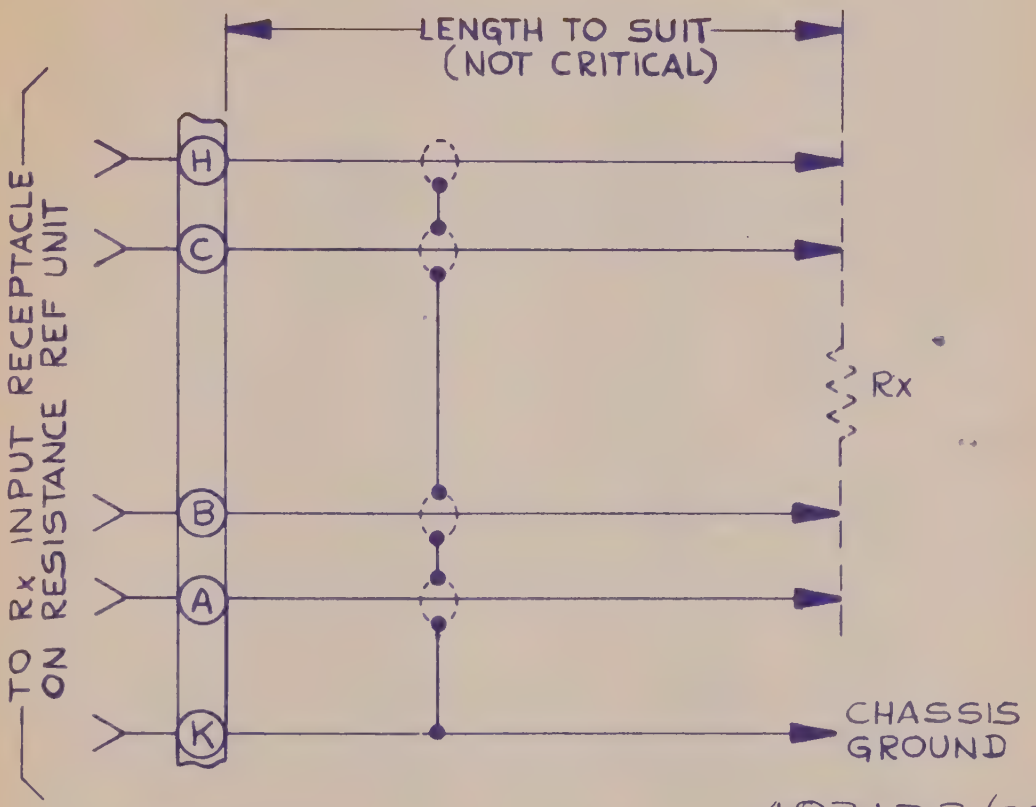
FIRST USED ON:
126 CD

BOONTON ELECTRONICS CORP.
MORRIS PLAINS, N. J.

MULTIPLIER SW.

B X5137-17 A

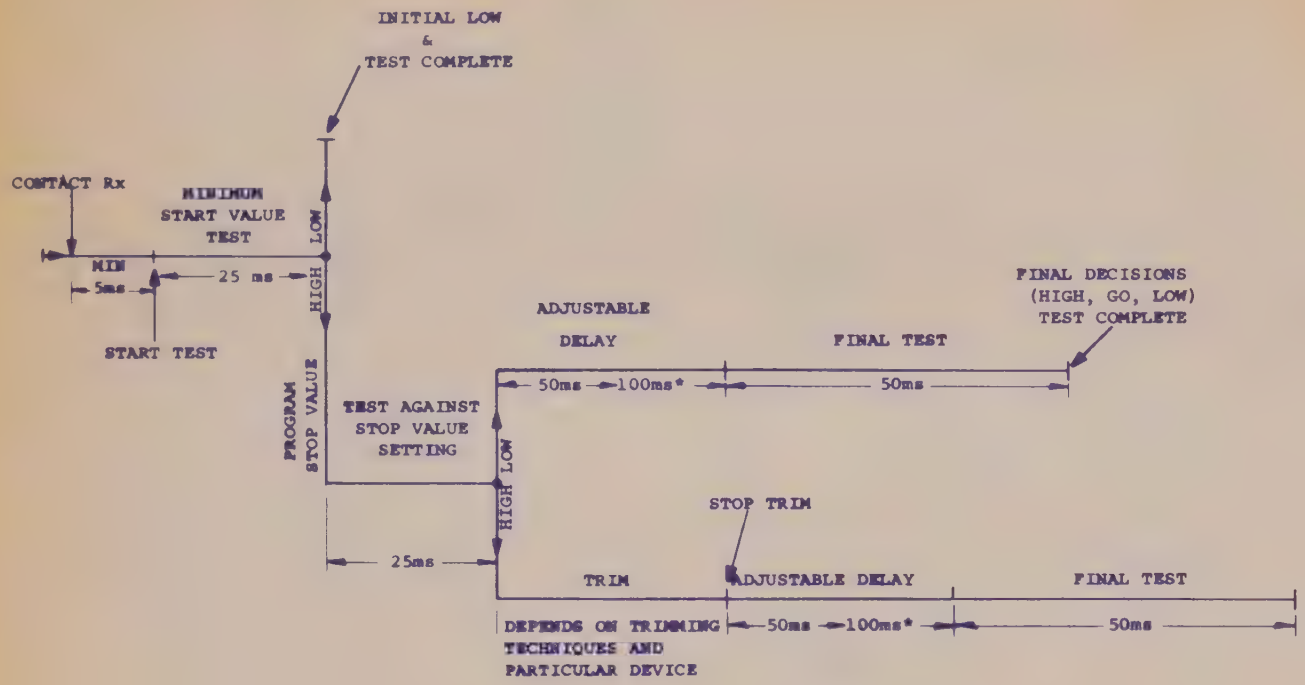
REVISIONS				M 7 68
ZONE	REV.	DATE	SIG.	DESCRIPTION



AMPHENOL
TYPE 165-14
479182

483132 (2 REQ'D)
KELVIN CLIPS

USED ON	TOLERANCES	BOONTON ELECTRONICS	PARSIPPANY NEW JERSEY
124B	2 PLACE DECIMAL .010 3 PLACE DECIMAL .005 UNLESS OTHERWISE SPECIFIED		
	SCALE	Rx WIRING	
	DRN CAB 9-18-67		
	CKD 9-19-67		
	APP	SH. OF	AX5100-40



* MAXIMUM DELAY TIME CAN BE SET AT FACTORY TO ANY VALUE UP TO 200ms. RANGE OF ADJUSTMENT IS 50% OF MAXIMUM DELAY TIME.

No.	ISSUE / CHANGE
	M766 M-7-07

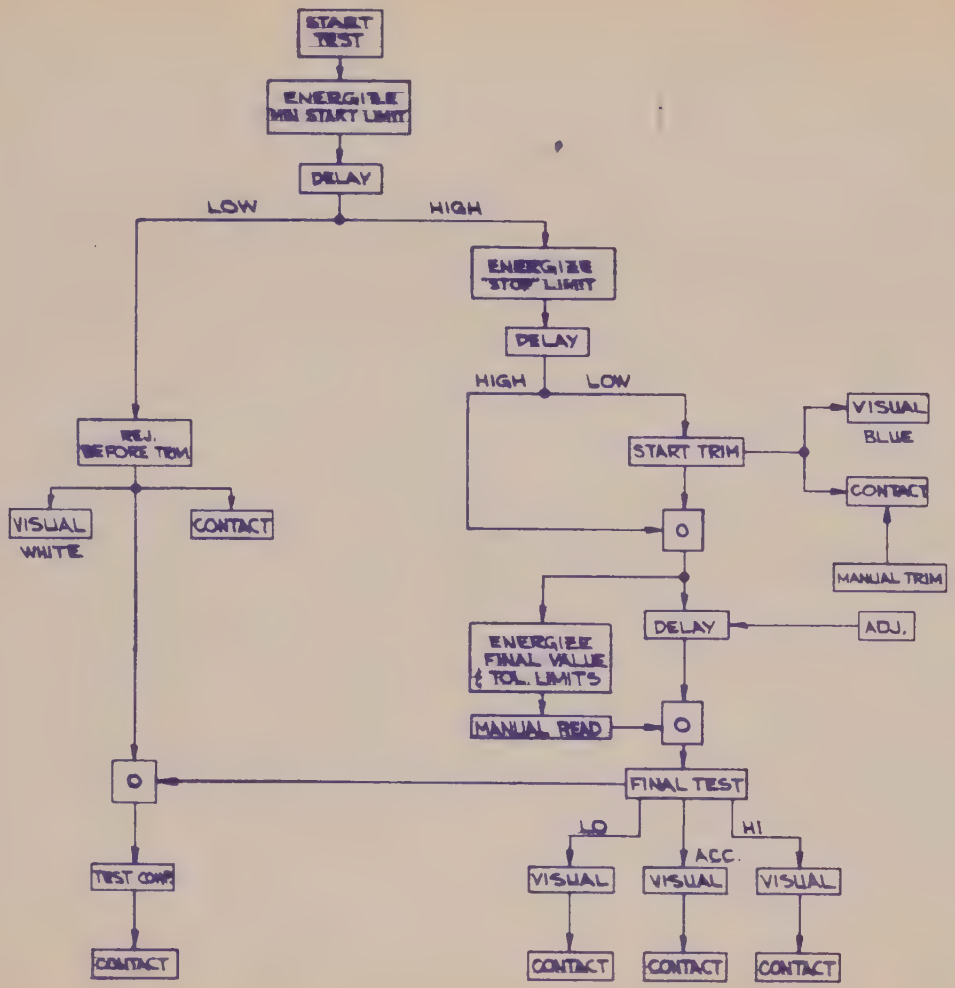
TOLERANCES: FRACTION ± 1/64, 2 PLACE DECIMAL .010, 3 PLACE DECIMAL .005, UNLESS OTHERWISE NOTED		
SCALE:		
DRN		3-3-66
CKD		
APP		
FIRST USED ON:		

BOONTON ELECTRONICS CORP.
MORRIS PLAINS, N. J.

TIMING DIAGRAM

BX5137-27

C ® 9810 TM60



M766 ISSUE M 7 67

No. M 7 68 CHANGE

TOLERANCES:

FRACTION ± 1/64,
2 PLACE DECIMAL .010,
3 PLACE DECIMAL .005,
UNLESS OTHERWISE NOTED

SCALE:

DRN		3-3-66
CKD		
APP		

FIRST USED ON:

126CD

BOONTON ELECTRONICS CORP.
MORRIS PLAINS, N. J.

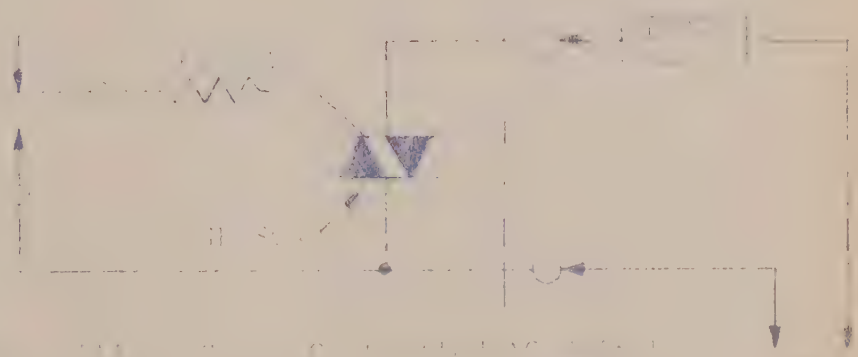
LOGIC FLOW DIAGRAM

BX5137-39

REVISIONS				
ZONE	REV	DATE	SIG.	DESCRIPTION
	A	11-19-9	[illegible]	REDRAWN

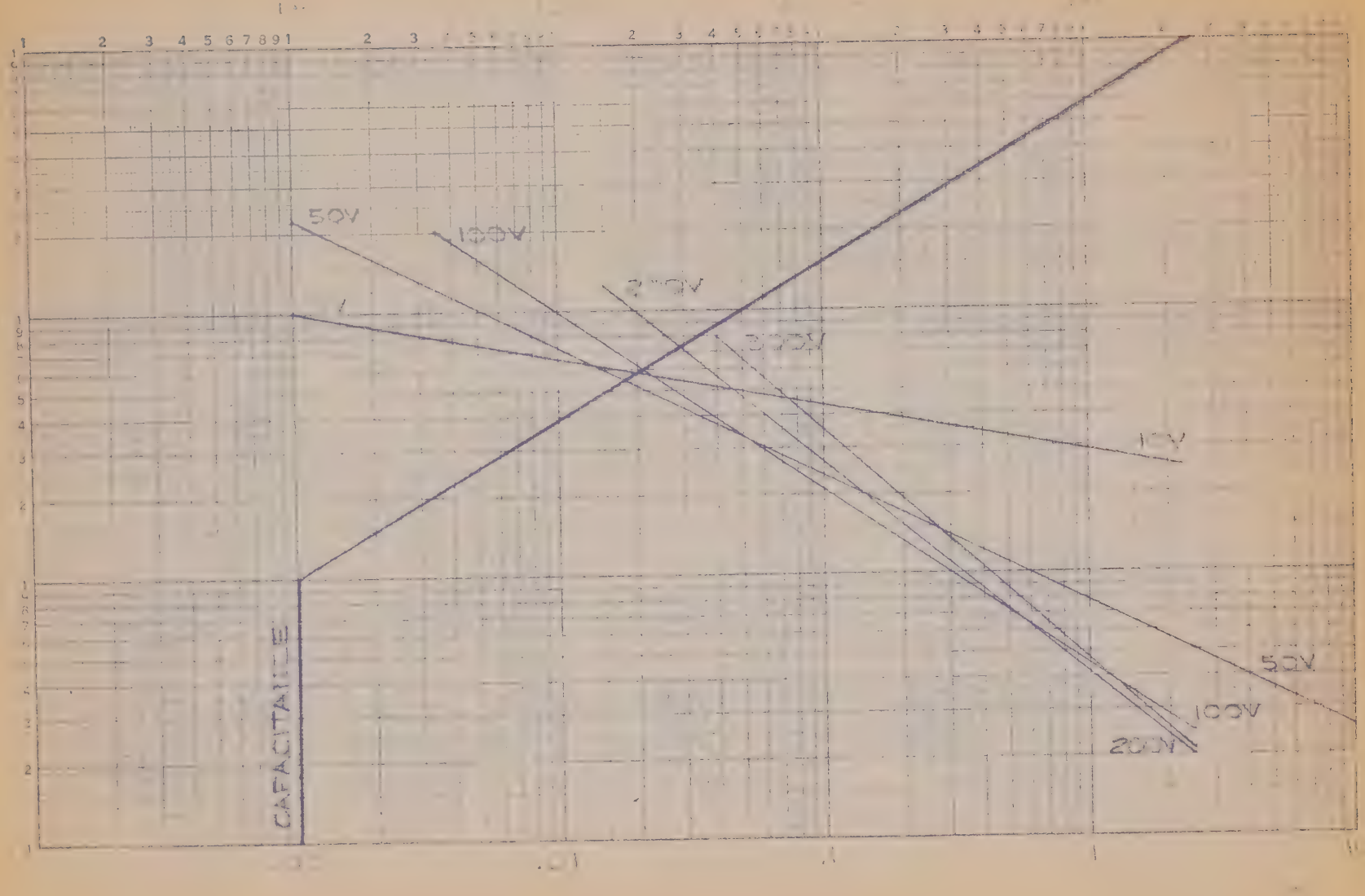
R-C Protection of
Mercury Wetted Relays

PIV- 500V
10A- Continuous
80A- 1 Cycle

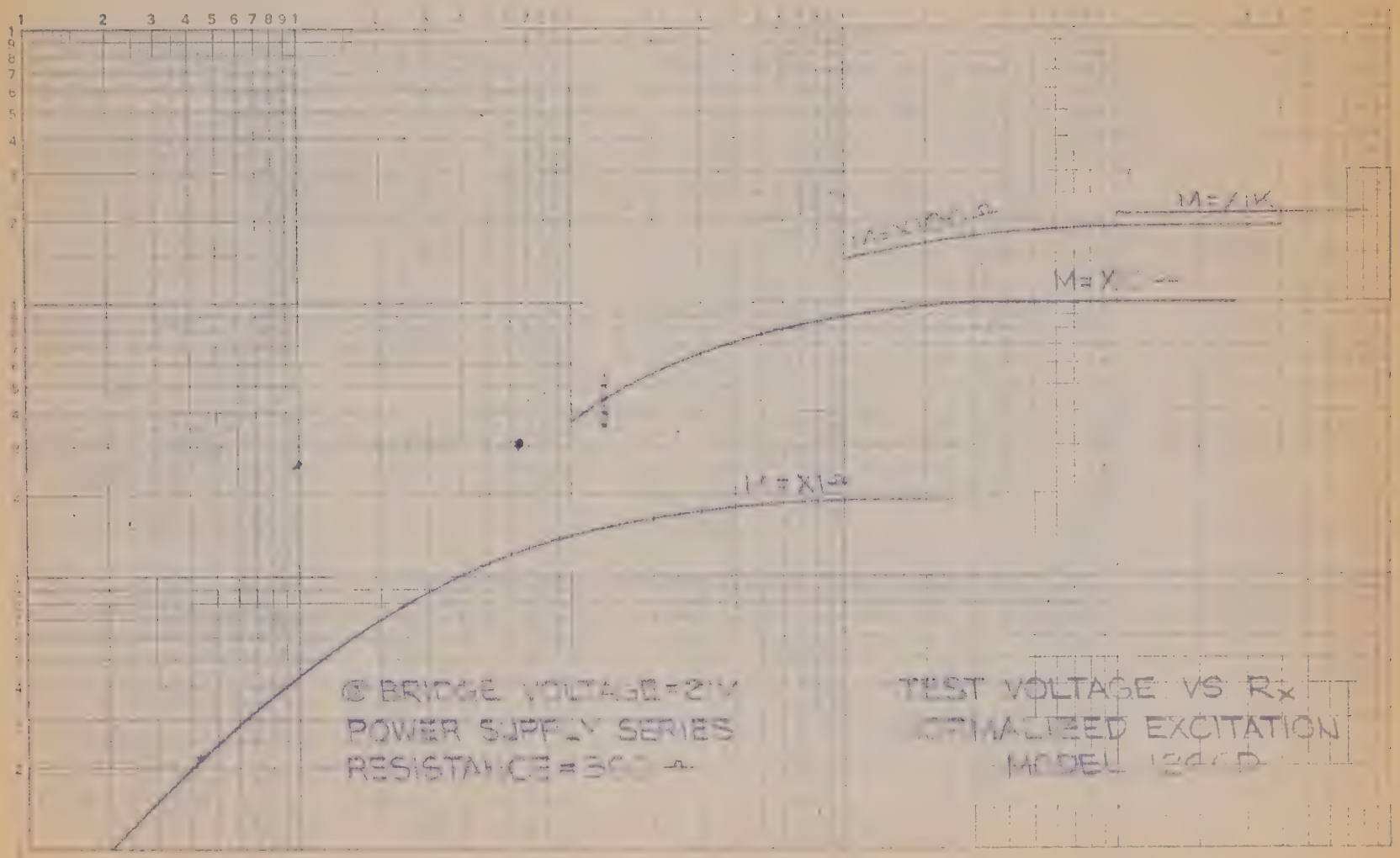


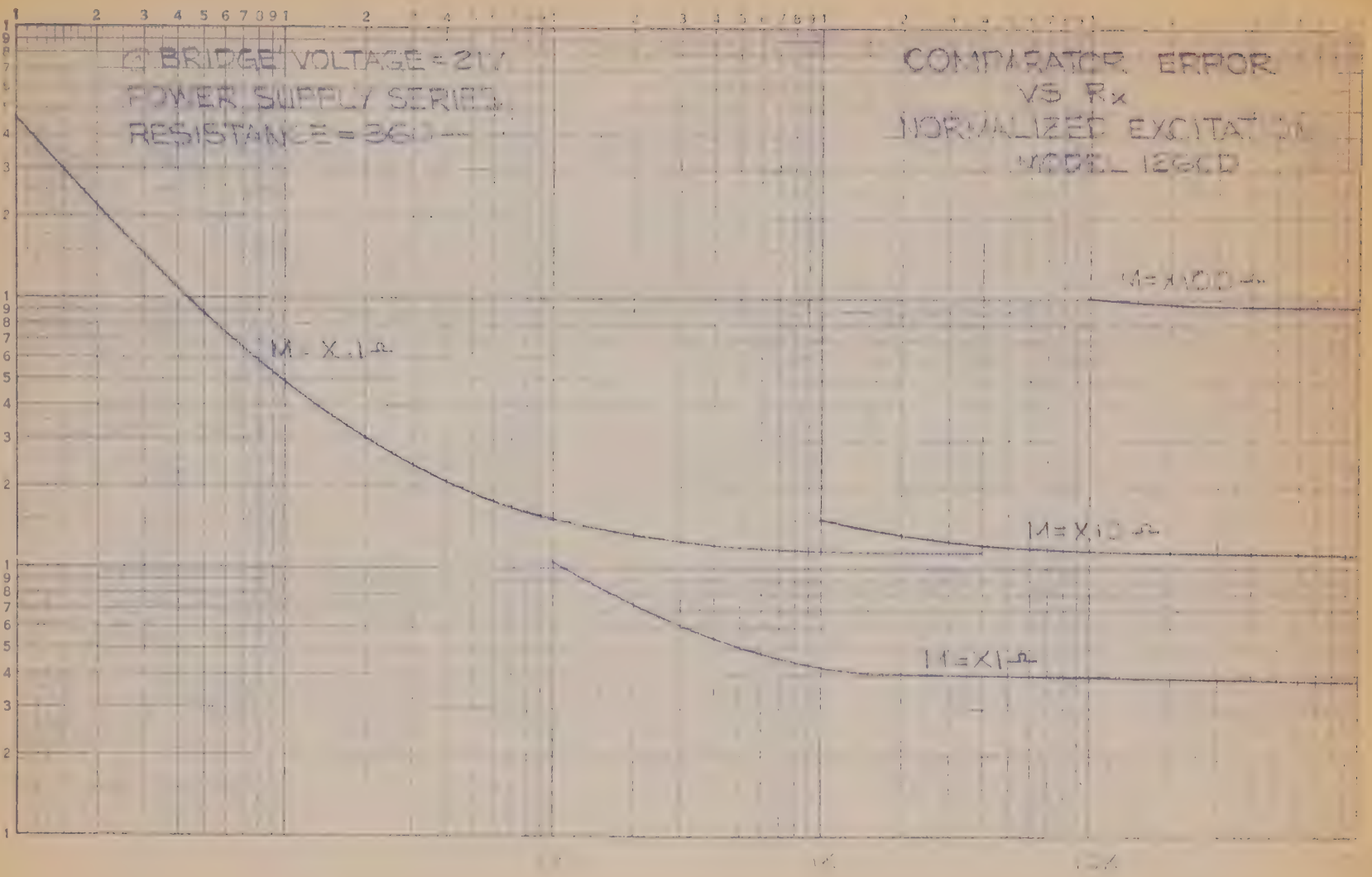
Protection of Mercury Wetted Relays

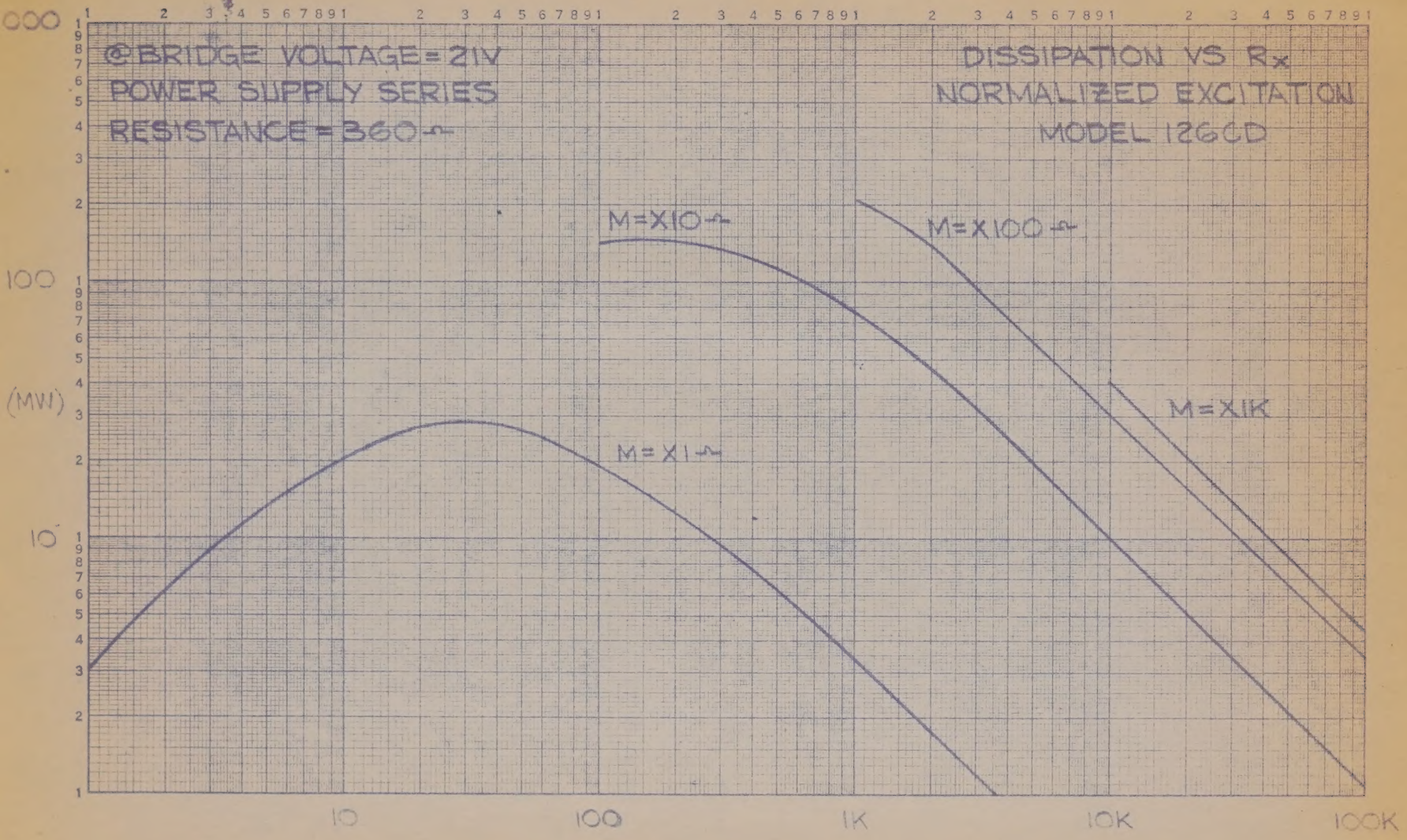
USED ON			TOLERANCES	BOONTON ELECTRONICS	PARSIPPANY NEW JERSEY
			2 PLACE DECIMAL .010 3 PLACE DECIMAL .005 UNLESS OTHERWISE SPECIFIED	Mercury Wetted Relays	
			SCALE		
			DRN [illegible]		
			CKD	SH OF	AX5100-50
			APP		


50V
100V
200V
1
10V
50V
100V
200V
CAPACITANCE
CAPACITANCE (μF)

AXE100-5


1 2 3 4 5 6 7 8 9 1
M=X1K
M=X
@ BRIDGE VOLTAGE=2V
POWER SUPPLY SERIES
TEST VOLTAGE VS Rx
OPTIMIZED EXCITATION


BRIDGE VOLTAGE = 21 V
POWER SUPPLY SERIES
RESISTANCE = 36 Ω
COMPARATOR ERROR
VS Rx
NORMALIZED EXCITATION
MODEL 126CD
M = X 100 Ω
M = X 10 Ω
M = X 1 Ω


@BRIDGE VOLTAGE = 21V
POWER SUPPLY SERIES
RESISTANCE = 360Ω
DISSIPATION VS Rx
NORMALIZED EXCITATION
MODEL 126CD
M=X10Ω
M=X100Ω
M=X1K
M=X1Ω
(MW)
10
100
1000
10
100
1K
10K
100K
Rx (OHMS)

EARLE & JONES INC.
NEW YORK

70-528

MP MASTER
MA24289